NAFA Bulletin

The Magazine for Fleet Administrators
October 1981

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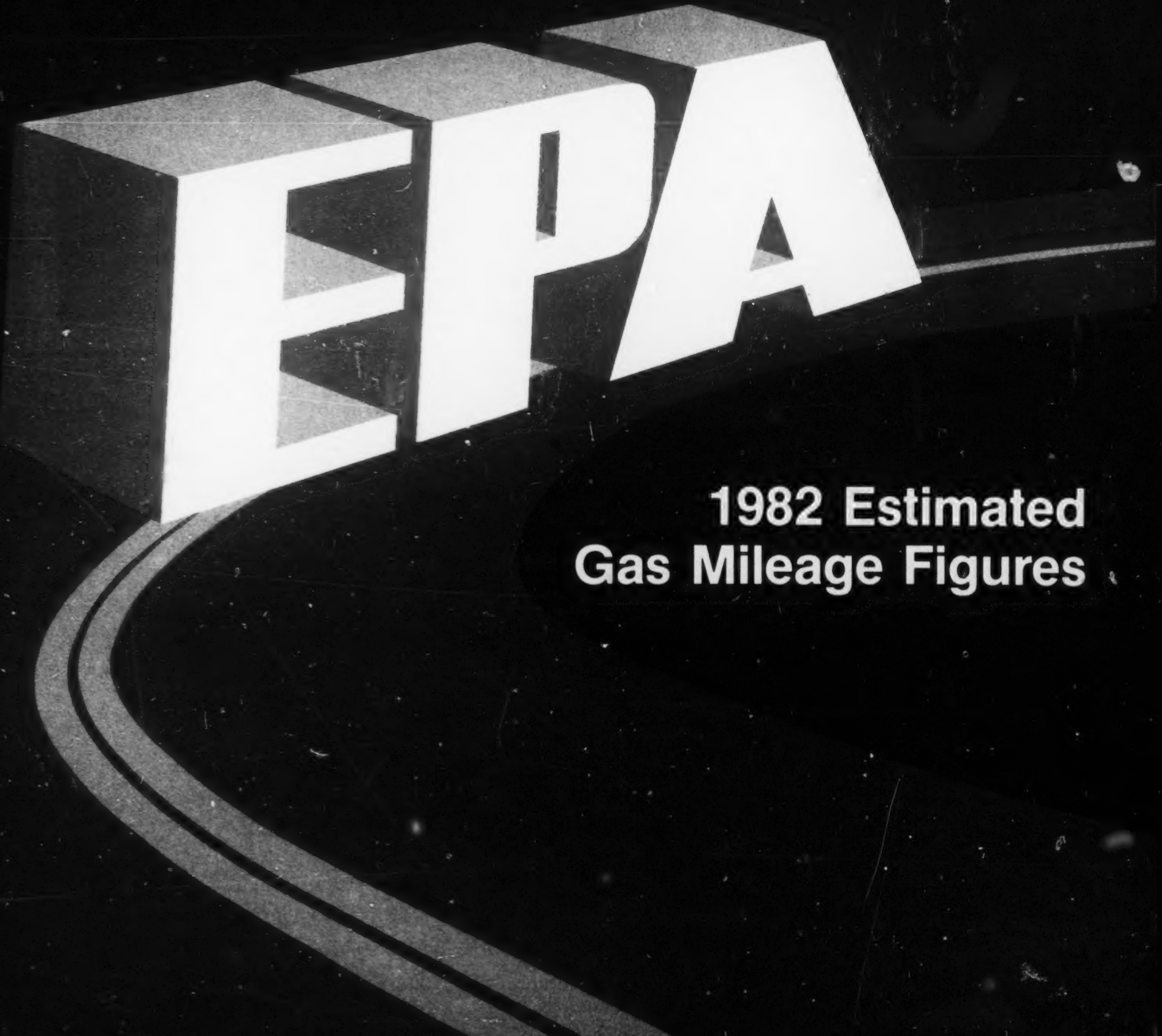

1982 Estimated Gas Mileage Figures

NAFA BULLETIN MARCH 1982

- NEWS HIGHLIGHTS 3
- LETTERS 4
- INSURANCE INSTITUTE SAYS SMALL CARS CAN BE MADE SAFER 6
- SAFETY — WHO NEEDS IT? 8
- USING REAR SEAT BELTS REDUCES INJURIES 28 PERCENT 15
- SAFETY 21
- BOARD OF GOVERNORS APPROVE NEW CHAPTER 24
- MVMA's GLOSSARY 27
- 10 FOOL PROOF WAYS TO CONSERVE GASOLINE 28
- NAFA's HOTLINE 30
- SOME GOV'T FLEETS SWITCHING TO USED CARS 32
- CHAPTER NEWS 34
- WHOLESALER/BROKER DIRECTORY 35
- DIRECTORY OF AUTO AUCTIONS 36
- DIRECTORY OF FLEET CAR DEALERS 38

NAFA

NATIONAL ASSOCIATION OF FLEET ADMINISTRATORS, INC.
295 Madison Ave., New York, N.Y. 10017

EPA's 1982 Estimated Gas Mileage Figures

The CAFE regulations, developed by the Department of Transportation, requires that all 1982 models average 24 miles per gallon. The U.S. auto industry, working hard to meet these requirements, is offering vehicles this model year that average 24 m.p.g. and higher.

The following mileage ratings, provided by the Environmental Protection Agency, include all vehicles sold in the United States except California.

The mileage ratings represent city driving figures. The Agency found that the fuel economy value determined on the city fuel economy test more accurately represents the mileage that the greatest number of American drivers could be expected to achieve in normal day-to-day driving and was most useful for comparison shopping.

EPA Car Categories

Mini-Compact — Less than 85 cubic feet of passenger and luggage volume.

Sub-Compact — Between 85 to 100 cubic feet of passenger and luggage volume.

Compact — Between 100 to 110 cubic feet of passenger and luggage volume.

Mid-Size — Between 110 to 120 cubic feet of passenger and luggage volume.

Large — More than 120 cubic feet of passenger and luggage volume.

MPG	Make	Transmission	CID	Cyl.
	Two-Seaters			
22	Alfa R. Spdr 2000 Vel	M5	120	4
15	Chevy Corvette	A4	350	8
10	Ferrari 308	M5	179	8
25	Fiat Spdr 2000	M5	122	4
22	Fiat Spdr 2000	A3	122	4
26	Fiat X1-9	M5	91	4
26	Ford EXP	A3	98	4
24	Legend Spdr Turbo	M5	122	4
26	Linc-Merc LN-7	A3	98	4
21	Mazda RX-7 (Rotary)	M5	70	2
19	Mazda RX-7 (Rotary)	A3	70	2
17	Mercedes Benz 380SL	A4	234	8
	Mini-Compact Cars			
18	Alfa R GTV	M5	152	6
10	Ferrari Mondial	M5	179	8
36	Honda Civic	M4	81	4
41	Honda Civic	M5	81	4
35	Honda Civic	M5	91	4
31	Honda Civic	A3	91	4
29	Honda Prelude	M5	107	4
26	Honda Prelude	A3	107	4
17	Porsche 911	M5	183	6
20	Porsche 924	M5	121	4
21	Porsche 924	A3	121	4
16	Porsche 928	M5	273	8
17	Porsche 928	A3	273	8
32	Renault LeCar	M4	85	4
38	Toyota Starlet	M5	79	4
	Sub-Compact Cars			
28	AMC Spirit	M4	151	4
25	AMC Spirit	M4	151	4
25	AMC Spirit	M5	151	4
23	AMC Spirit	A3	151	4
21	AMC Spirit	M4	258	6
22	AMC Spirit	M5	258	6
21	AMC Spirit	A3	258	6
38	Audi 4000 Coupe	D-M5	97	4
28	Audi 4000 Coupe	M5	105	4
24	Audi 4000 Coupe	A3	105	4
24	Audi 4000 Coupe	M5	131	5
20	Audi 4000 Coupe	A3	131	5
25	BMW 3201	M5	108	4
27	BMW 3201	A3	108	4
19	BMW 633CSI	M5	196	6
18	BMW 633CSI	A3	196	6
24	Chevy Camaro	M4	151	4
23	Chevy Camaro	A3	151	4
40	Chevy Chevette	D-M5	111	4
36	Chevy Chevette	D-A3	111	4
26	Datsun 200SX	M5	133	4
25	Datsun 200SX	A3	133	4
30	Datsun 210	M4	75	4
36	Datsun 210	M5	85	4
31	Datsun 210	M4	91	4
32	Datsun 210	M5	91	4
31	Datsun 210	A3	91	4
34	Datsun 310	M4	91	4
33	Datsun 310	M5	91	4
22	Datsun 810	M5	146	6
21	Datsun 810	A3	146	6
30	Datsun 810	D-M5	170	6
28	Datsun 810	D-A3	170	6
24	Dodge Challenger	M5	156	4
23	Dodge Challenger	A3	156	4
39	Dodge Colt	M4	86	4
35	Dodge Colt	M4	86	4
31	Dodge Colt	M4	98	4
29	Dodge Colt	A3	98	4
30	Dodge 024	M4	105	4
34	Dodge 024	M4	105	4
26	Dodge 024	M4	135	4
25	Dodge 024	A3	135	4
24	Fiat Brava	M5	122	4
24	Fiat Brava	A3	122	4
22	Ford Mustang	M4	140	4
21	Ford Mustang	M5	140	4
21	Ford Mustang	A3	140	4
20	Ford Mustang	A3	200	6
19	Ford Mustang	A3	255	8
30	Honda Accord	M5	107	4
26	Honda Accord	A3	107	4
27	Isuzu I-Mark	M5	111	4
26	Isuzu I-Mark	A3	111	4
41	Isuzu I-Mark	D-M4	111	4
39	Isuzu I-Mark	D-M5	111	4
33	Isuzu I-Mark	D-A3	111	4
16	Jaguar XJ	A3	258	6
17	Jaguar XJ	A3	258	6
19	Lancia Beta Zagato	M5	122	4
20	Lancia Beta Zagato	A3	122	4
22	Lincoln Mercury Capri	M4	140	4

(Continued on page 7)

Actual Real World Mileage

	Model Year 1980	Model Year 1981
4 cyl.	22.6	23
6 cyl.	17.7	18.5
8 cyl.	16.4	20.2*

*This figure is due to the increasing number of diesel engines.
Source — Peterson, Howell & Heather

The EPA estimated m.p.g. for 1982 models is 25.10 with actual road m.p.g. estimated at 22.39 — a loss factor of 11 percent.

The chart above shows actual real world mileage for 1980 and 1981.

MPG	Make	Transmission	CID	Cyl.
21	Lincoln Mercury Capri	M5	140	4
21	Lincoln Mercury Capri	A3	140	4
20	Lincoln Mercury Capri	A3	200	6
19	Lincoln Mercury Capri	A3	255	8
34	Mazda GLC	M4	91	4
35	Mazda GLC	M5	91	4
30	Mazda GLC	A3	91	4
27	Mazda 626	M5	120	4
26	Mazda 626	A3	120	4
24	Mitsubishi Chal-Sapporo	M5	156	4
23	Mitsubishi Chal-Sapporo	A3	156	4
39	Mitsubishi Colt-Champ	M4	86	4
34	Mitsubishi Colt-Champ	M4	86	4
31	Mitsubishi Colt-Champ	M4	96	4
29	Mitsubishi Colt-Champ	A3	96	4
39	Plymouth Champ	M4	86	4
35	Plymouth Champ	M4	86	4
31	Plymouth Champ	M4	98	4
29	Plymouth Champ	A3	98	4
24	Plymouth Sapporo	M5	156	4
23	Plymouth Sapporo	A3	156	4
30	Plymouth TC3-Turismo	M4	105	4
34	Plymouth TC3-Turismo	M4	105	4
26	Plymouth TC3-Turismo	M4	135	4
25	Plymouth TC3-Turismo	A3	135	4
24	Pontiac Firebird	M4	151	4
24	Pontiac Firebird	M4	151	4
23	Pontiac Firebird	A3	151	4
9	Rolls Royce Corniche	A3	412	8
32	Subaru	M4	97	4
32	Subaru	M5	97	4
31	Subaru	M5	109	4
27	Subaru	A3	109	4
27	Subaru 4WD	M4	109	4
27	Subaru 4WD	M4	109	4
24	Toyota Celica	M5	144	4
24	Toyota Celica	A4	144	4
21	Toyota Celica Supra	M5	168	6
21	Toyota Celica Supra	A4	168	4
30	Toyota Corolla	M4	108	4
28	Toyota Corolla	M5	108	4
27	Toyota Corolla	A3	108	4
28	Toyota Corolla	A4	108	4
36	Toyota Corolla Torcel	M4	89	4
32	Toyota Corolla Torcel	M5	89	4
29	Toyota Corolla Torcel	A3	89	4
24	Toyota Corona	M5	144	4
24	Toyota Corona	A4	144	4
22	Toyota Cresside	A4	168	6
42	Volkswagen Jetta	D-M4	97	4
43	Volkswagen Jetta	D-M5	97	4
37	Volkswagen Jetta	D-A3	97	4
28	Volkswagen Jetta	M5	105	4
24	Volkswagen Jetta	A3	105	4
45	Volkswagen Rabbit	D-M4	97	4
43	Volkswagen Rabbit	D-M5	97	4
37	Volkswagen Rabbit	D-A3	97	4
32	Volkswagen Rabbit	M4	105	4
30	Volkswagen Rabbit	M4	105	4
27	Volkswagen Rabbit	M5	105	4
25	Volkswagen Rabbit	A3	105	4
28	Volkswagen Scirocco	M5	105	4
24	Volkswagen Scirocco	A3	105	4
	Compact Cars			
24	AMC Concord	M4	151	4
25	AMC Concord	M5	151	4
23	AMC Concord	A3	151	4
20	AMC Concord	M4	258	6
21	AMC Concord	M4	258	6
21	AMC Concord	M5	258	6
21	AMC Concord	M5	258	6
20	AMC Concord	A3	258	6
21	AMC Concord	A3	258	6
22	Audi 5000	M5	131	5
18	Audi 5000	A3	131	5
19	Audi 5000	A3	131	5
19	BMW 733I	M5	196	6
18	BMW 733I	A3	196	6
26	Buick Skylark	M4	151	4
25	Buick Skylark	A3	151	4
22	Buick Skylark	A3	173	6
26	Cadillac Cimarron	M4	112	4
25	Cadillac Cimarron	A3	112	4
26	Chevy Cavalier	M4	112	4
30	Chevy Cavalier	M4	112	4
25	Chevy Cavalier	A3	112	4
32	Datsun Nissan Stanza	M5	120	4
30	Dodge Omni	M4	105	4
35	Dodge Omni	M4	105	4
27	Dodge Omni	M4	135	4
25	Dodge Omni	A3	135	4
28	Fiat Strada	M5	91	4
26	Fiat Strada	A3	91	4
28	Ford Escort	M4	98	4
31	Linc-Merc Lynx	M4	98	4
29	Linc-Merc Lynx	A3	98	4
28	Mer Benz 240-300-300C	D-M4	147	4
24	Mer Benz 240-300-300C	D-A4	147	4
27	Mer Benz 240-300-300C	D-A4	183	5
27	Mer Benz 300SD	D-A4	183	5
17	Mer Benz 380SEC	A4	234	8
26	Olds Omega	M4	151	4
25	Olds Omega	A3	151	4
22	Olds Omega	A3	173	6
28	Peugeot 505	D-M4	141	4
27	Peugeot 505 Turbo	D-M5	141	4
27	Peugeot 505	D-A3	141	4
26	Peugeot 505 Turbo	D-A3	141	4
27	Peugeot 604 Turbo	D-M5	141	4
23	Peugeot 604 Turbo	D-A3	141	4
35	Plymouth Horizon	M4	105	4
30	Plymouth Horizon	M4	105	4
27	Plymouth Horizon	M4	135	4
25	Plymouth Horizon	A3	135	4
30	Pontiac J2000	M4	112	4
25	Pontiac J2000	A3	112	4
9	Rolls Royce Camargue	A3	412	8
21	Saab 900	M5	121	4
19	Saab 900 Turbo	M5	121	4
20	Saab 900 Turbo	A3	121	4
21	Saab 900	A3	121	4
28	Volkswagen Quantum	M5	105	4

(Continued on page 10)

MPG	Make	Transmission	CID	Cyl.
23	Volkswagen Quantum	A3	105	4
25	Volvo Sedan	M4	130	4
19	Volvo Sedan Turbo	M4	130	4
22	Volvo Sedan	M4	130	4
23	Volvo Sedan	A4	130	4
20	Volvo Sedan Turbo	A4	130	4
23	Volvo Sedan	A4	130	4
29	Volvo Sedan	D-M4	145	6
26	Volvo Sedan	D-A3	145	6
17	Volvo Sedan	A3	174	6

Mid-Size Cars

MPG	Make	Transmission	CID	Cyl.
25	Buick Century	A3	151	4
21	Buick Regal	A3	231	6
18	Buick Regal Turbo	A3	231	6
19	Buick Regal	A3	252	6
23	Buick Regal	D-A3	350	8
16	Buick Riviera	A4	307	8
20	Buick Riviera	D-A4	350	8
17	Cadillac Eldorado	A4	249	8
20	Cadillac Eldorado	D-A4	350	8
17	Cadillac Seville	A4	249	8
20	Cadillac Seville	D-A4	350	8
25	Chevy Celebrity	A3	151	4
22	Chevy Celebrity	A3	173	6
26	Chevy Citation	M4	151	4
25	Chevy Citation	A3	151	4
22	Chevy Citation	A3	173	6
21	Chevy Malibu	A3	229	6
18	Chevy Malibu	A3	267	8
23	Chevy Malibu	D-A3	350	8
21	Chevy Monte Carlo	A3	229	6
18	Chevy Monte Carlo	A3	267	8
23	Chevy Monte Carlo	D-A3	350	8
18	Chrysler Cordoba	A3	225	6
17	Chrysler Cordoba	A3	318	8
26	Chrysler LeBaron	M4	135	4
25	Chrysler LeBaron	A3	135	4
23	Chrysler LeBaron	A3	156	4
18	Chrysler New Yorker	A3	225	6
17	Chrysler New Yorker	A3	318	8
26	Dodge Aires	M4	135	4
25	Dodge Aires	A3	135	4
23	Dodge Aires	A3	156	4
18	Dodge Diplomat	A3	225	6
17	Dodge Diplomat	A3	318	8
18	Dodge Mirada	A3	225	6
17	Dodge Mirada	A3	318	8
26	Dodge 400	M4	135	4
25	Dodge 400	A3	135	4
23	Dodge 400	A3	156	4
22	Ford Fairmont Futura	M4	140	4
21	Ford Fairmont Futura	A3	120	4
20	Ford Fairmont Futura	A3	200	6
19	Ford Fairmont Futura	A3	255	8
22	Ford Granada	M4	180	4
21	Ford Granada	A3	140	4
19	Ford Granada	A3	231	6
19	Ford Thunderbird	A4	231	6
16	Imperial	A3	318	8
18	Linc-Merc Continental	A4	231	6
17	Linc-Merc Continental	A4	302	8
19	Linc-Merc Cougar	A3	231	6
19	Linc-Merc XR-7	A4	231	6
22	Linc-Merc Zephyr	M4	140	4
21	Linc-Merc Zephyr	A3	140	4
20	Linc-Merc Zephyr	A3	200	6
19	Linc-Merc Zephyr	A3	255	8
8	Maserati Quattroporte	A3	301	8
17	Mercedes-Benz 380SEL	A4	234	8
25	Olds Cutlass Ciera	A3	151	4
21	Olds Cutlass Supreme	A3	231	6
19	Olds Cutlass Supreme	A3	260	8
23	Olds Cutlass Supreme	D-A3	350	8
16	Olds Toronado	A4	307	8
21	Olds Toronado	D-A4	350	8
18	Plymouth Gran Fury	A3	225	6
17	Plymouth Gran Fury	A3	318	8
26	Plymouth Reliant	M4	135	4
25	Plymouth Reliant	A3	135	4
23	Plymouth Reliant	A3	156	4
21	Pontiac Bonneville-G	A3	231	6
19	Pontiac Bonneville-G	A3	252	6
23	Pontiac Bonneville-G	D-A3	350	8
21	Pontiac Grand Prix	A3	231	6
19	Pontiac Grand Prix	A3	252	6
23	Pontiac Grand Prix	D-A3	350	8
26	Pontiac Phoenix	M4	151	4
25	Pontiac Phoenix	A3	151	4
22	Pontiac Phoenix	A3	173	6
25	Pontiac 6000	A3	151	4
26	Pontiac 6000	A3	151	4
22	Pontiac 6000	A3	173	6
10	Rolls Royce Sil-Spur-Mu	A3	412	8

Large Cars

MPG	Make	Transmission	CID	Cyl.
18	Buick Electra	A4	252	6
16	Buick Electra	A4	307	8
22	Buick Electra	D-A3	350	8
19	Buick LeSabre	A3	231	6
18	Buick LeSabre	A4	252	6
17	Buick LeSabre	A3	307	8
17	Buick LeSabre	A4	307	8
22	Buick LeSabre	D-A3	350	8
17	Cadillac De Ville-Br.	A4	249	8
17	Cadillac De Ville-Br.	A4	249	8
18	Cadillac De Ville-Br.	A4	252	6
22	Cadillac De Ville-Br.	D-A3	350	8
10	Cadillac Limousine	A3	368	8
17	Chevy Impala-Caprice	A3	267	8
18	Chevy Impala-Caprice	A4	267	8
17	Chevy Impala-Caprice	A4	305	8
22	Chevy Impala-Caprice	A3	350	8
18	Ford LTD	A4	255	8
17	Ford LTD	A4	302	8
17	Lincoln-Mercury Mark VI	A4	302	8
18	Lincoln-Mercury Marquis	A4	302	8
17	Lincoln-Merc. Town Car	A4	302	8
19	Oldsmobile Delta 88	A3	231	6
17	Oldsmobile Delta 88	A3	260	8
17	Oldsmobile Delta 88	A3	307	8
17	Oldsmobile Delta 88	A4	307	8
23	Oldsmobile Delta 88	D-A3	350	8
18	Olds Ninety-Eight	D-A4	350	8

Small Station Wagons

MPG	Make	Transmission	CID	Cyl.
24	AMC Concord Wagon	M4	151	4
25	AMC Concord Wagon	M5	151	4
23	AMC Concord Wagon	A3	151	4
21	AMC Concord Wagon	M4	258	6
20	AMC Concord Wagon	M4	258	6
21	AMC Concord Wagon	M5	258	6
21	AMC Concord Wagon	M5	258	6
20	AMC Concord Wagon	A3	258	6
21	AMC Concord Wagon	A3	258	6
26	Chevy Cavalier Wagon	M4	112	4
25	Chevy Cavalier Wagon	A3	112	4
31	Datsun 210 Wagon	M4	91	4
31	Datsun 210 Wagon	M5	91	4
30	Datsun 210 Wagon	A3	91	4
22	Datsun 810 Wagon	M5	146	6
21	Datsun 810 Wagon	A3	146	6
30	Datsun 810 Wagon	D-M5	170	6
28	Datsun 810 Wagon	D-A3	170	6

(Continued on page 12)

MPG	Make	Trans-mission	CID	Cyl.
28	Ford Escort Wagon	M4	96	4
29	Ford Escort Wagon	A3	96	4
35	Honda Civic Wagon	M5	91	4
31	Honda Civic Wagon	A3	91	4
28	Linc-Merc Lynx Wagon	M4	98	4
29	Linc-Merc Lynx Wagon	A3	98	4
30	Mazda GLC Wagon	M4	91	4
31	Mazda GLC Wagon	M5	91	4
28	Mazda GLC Wagon	A3	91	4
26	Pontiac J2000 Wagon	M4	112	4
25	Pontiac J2000 Wagon	A3	112	4
27	Subaru Wagon	M4	109	4
31	Subaru Wagon	M5	109	4
27	Subaru Wagon	A3	109	4
26	Subaru Wagon 4WD	M4	109	4
28	Toyota Corolla Wagon	M5	108	4
27	Toyota Corolla Wagon	A3	108	4
24	Toyota Corolla Wagon	M5	144	4
24	Toyota Corolla Wagon	A4	144	4
22	Toyota Corolla Wagon	A4	168	6
28	Volks Quantum Wagon	M5	105	4
23	Volks Quantum Wagon	A3	105	4

Mid-Size Station Wagons

MPG	Make	Trans-mission	CID	Cyl.
21	Buick Regal Est. Wgn.	A3	231	6
19	Buick Regal Est. Wgn.	A3	252	6
23	Buick Regal Est. Wgn.	D-A3	350	8
21	Chevy Malibu Wgn.	A3	229	6
17	Chevy Malibu Wgn.	A3	267	8
17	Chevy Malibu Wgn.	A3	305	8
23	Chevy Malibu Wgn.	D-A3	350	8
26	Dodge Aries Wgn.	M4	135	4
25	Dodge Aries Wgn.	A3	135	4
23	Dodge Aries Wgn.	A3	156	4
19	Ford Granada Wgn.	A3	231	6
19	Linc Merc Cougar Wgn.	A3	231	6
27	Mer-Benz 300 TD Turbo	D-A4	183	5
16	Olds Custom Cruis Wgn.	A4	307	8
22	Olds Custom Cruis Wgn.	D-A3	350	8
21	Olds Cutl Cruis Wgn.	A3	213	6
17	Olds Cutl Cruis Wgn.	A3	260	8
17	Olds Cutl Cruis Wgn.	A3	307	8
23	Olds Cutl Cruis Wgn.	D-A3	350	8
28	Peugeot 504 Wgn.	D-M4	141	4
27	Peugeot 504 Wgn.	D-A3	141	4
26	Plymouth Reliant Wgn.	M4	135	4
25	Plymouth Reliant Wgn.	A3	135	4
23	Plymouth Reliant Wgn.	A3	156	4
21	Pontiac Bonnev G. Wgn.	A3	231	6
19	Pontiac Bonnev G. Wgn.	A3	252	6
23	Pontiac Bonnev G. Wgn.	D-A3	350	8
25	Volvo Wagon	M4	130	4
22	Volvo Wagon	M4	130	4
19	Volvo Wagon Turbo	M4	130	4
22	Volvo Wagon	A4	130	4
23	Volvo Wagon	A4	130	4
20	Volvo Wagon Turbo	A4	130	4
29	Volvo Wagon	D-M4	145	6
26	Volvo Wagon	D-A3	145	6

Large Station Wagons

MPG	Make	Trans-mission	CID	Cyl.
16	Buick LeSabre-Electra	A4	307	8
22	Buick LeSabre-Electra	D-A3	350	8
16	Chevy Impala-Caprice	A4	267	8
16	Chevy Impala-Caprice	A4	305	8
22	Chevy Impala-Caprice	D-A3	350	8
17	Ford LTD	A4	302	8
17	Lincoln Mercury Marquis	A4	302	8

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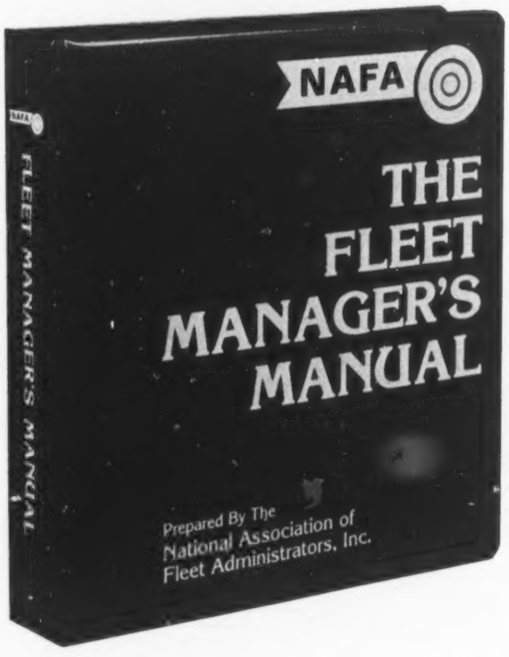
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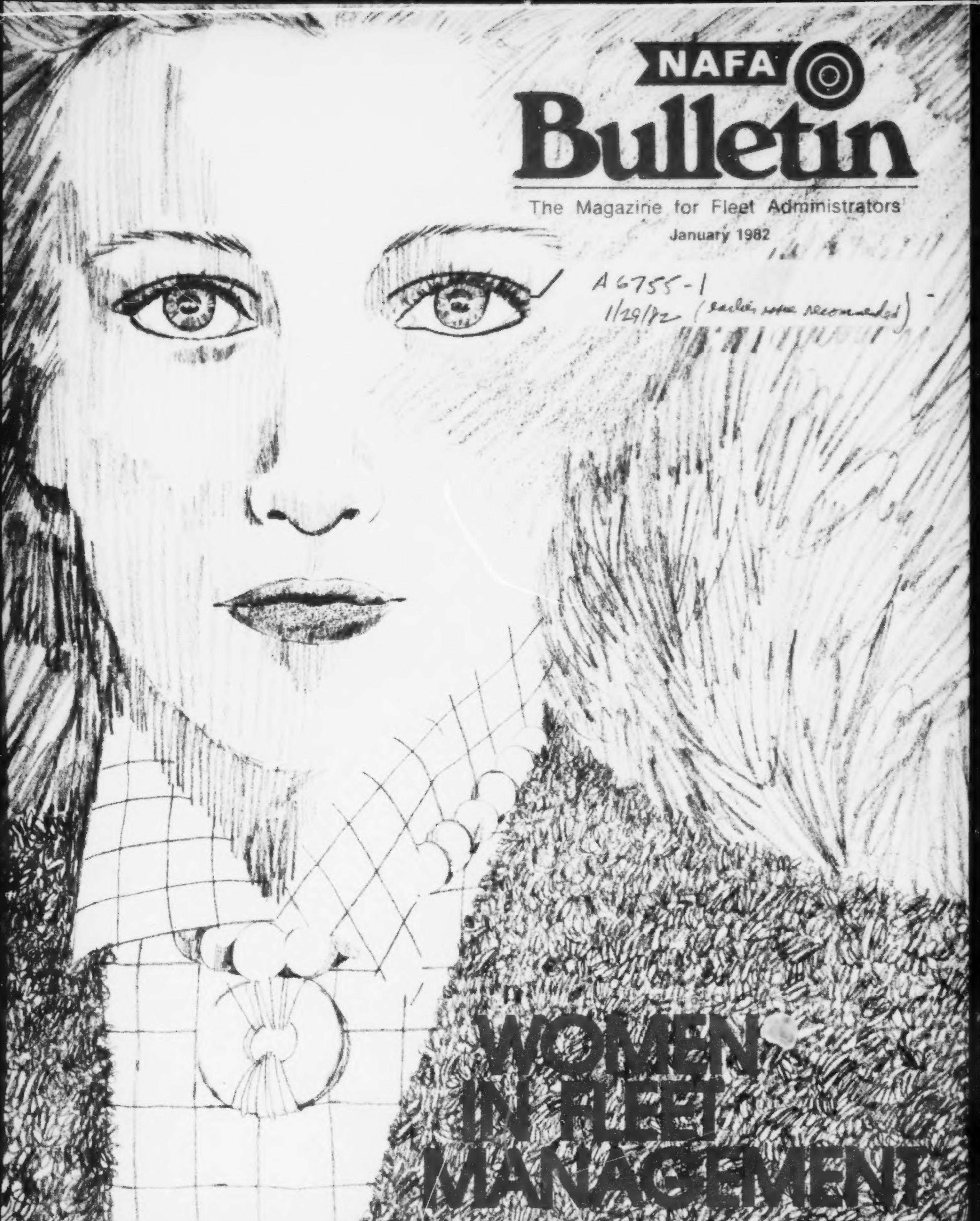


WOMEN IN FLEET MANAGEMENT

NAFA BULLETIN **MARCH 1982**

- NEWS HIGHLIGHTS 3
- LETTERS 4
- INSURANCE INSTITUTE SAYS SMALL CARS CAN BE MADE SAFER 6
- SAFETY — WHO NEEDS IT? 8
- USING REAR SEAT BELTS REDUCES INJURIES 28 PERCENT 15
- SAFETY 21
- BOARD OF GOVERNORS APPROVE NEW CHAPTER 24
- MVMA's GLOSSARY 27
- 10 FOOL PROOF WAYS TO CONSERVE GASOLINE 28
- NAFA's HOTLINE 30
- SOME GOV'T FLEETS SWITCHING TO USED CARS 32
- CHAPTER NEWS 34
- WHOLESALER/BROKER DIRECTORY 35
- DIRECTORY OF AUTO AUCTIONS 36
- DIRECTORY OF FLEET CAR DEALERS 38

NAFA

NATIONAL ASSOCIATION OF FLEET ADMINISTRATORS, INC.
295 Madison Ave., New York, N.Y. 10017

Can the U.S. Industry Become Competitive Again?

The very thought that the question of whether the United States automobile industry will survive may seem ridiculous, but the question was raised — with some disturbing answers — by a report submitted to the U.S. Senate Committee on Finance, Subcommittee on International Trade last month. The report was prepared by the Bureau of Industrial Economics, Department of Commerce; International Trade Administration, Department of Commerce, and the Transportation Systems Center, Department of Transportation.

As the largest volume customers of the U.S. automobile industry, NAFA members and affiliates must be concerned with the implications of the "Status Report — United States Automobile Industry." This article is based on that report.

Sales of domestic-made automobiles are down a third from the 1978 peak. Sales of imports are up 15 percent from 1978. There is no prospect for a sharp turnaround in the immediate future. Cyclical factors only partially account for industry difficulties. A fundamental shift downward in the long run demand for automobiles, and some categories of trucks, has also become evident and can be expected to continue. Domestic producers are not cost competitive with Japanese producers.

Poor sales have resulted in losses for the auto manufacturers. More important, they have resulted in large negative cash flows for the auto companies. The erosion of the financial strength of the auto companies is best illustrated by the combined working capital position of the Big Four (GM, Ford, Chrysler, and AMC), which has fallen from $13 billion at year end 1978 to $300 million at the end of the third quarter of 1981.

Companies Forced to Act

Given the severe cash flow pressures, the auto companies may be forced to pursue any of the following actions:

- **Postponements of modernizing investments**
- **Shutdowns of excess capacity**
- **Increases in foreign sourcing**
- **Curtailments of wage gains**
- **Infusions of large external financing**

There are ample signs that the companies are already pursuing combinations of these approaches. Although the analysis in this report suggests that all these steps may be required to preserve industry liquidity, the question remains whether the industry can do this and restore long-run competitiveness at the same time. A revived economy is the only change that can be realistically expected to remedy the industry's condition. And, even then, reduced demand growth will make it difficult for domestic producers to return to the sales and profit years of decades past. Pressure to find new jobs for displaced auto workers can be expected to persist.

Following severe declines in 1979 and 1980, new passenger car retail sales will drop another three percent in 1981 to an estimated total of only 8.7 million units. From the 1978 peak, new car sales will end 1981 down 22 percent. Sales of domestically-produced cars are being particularly hard hit, falling to about 6.3 million units for the year, a drop of 31 percent from the 1978 peak.

Reflecting a combination of uncertain economic conditions, high interest rates, and high car prices, sales of domestic-make cars have been sluggish all year, save for two periods (February-March and August-September) when manufacturers offered rebates and other incentives.

Although industry analysts earlier had expected the new car market to begin a recovery in the fourth quarter, it is now apparent that the long awaited upturn will occur no earlier than late winter or early spring. To counter the weak market,

(Continued on page 20)

The U.S. Auto Industry

(Continued from page 19)

manufacturers have been offering a series of sales incentive programs. Incentives so early in a model year are unprecedented.

In contrast to domestic-make car sales, imported car sales have been at or near record levels since the sharp rise in gasoline prices in 1979. Import penetration, at 17.9 percent of the market in 1978, reached 26.7 percent in 1980. Peaking at 29.6 percent in July, import penetration will average an estimated 26.5 percent for 1981. The share would have been higher this year had Japan not imposed export restraints on its car manufacturers.

Japanese products have dominated the import market since 1979, consistently accounting for about 80 percent of imported car sales. Because of the general weakness of the auto market and Japan's export restraining program, import sales are expected to decline four percent from last year's record level to a total of 2.2 million cars for 1981.

One of the most noteworthy developments in recent years has been the dramatic shift of consumer demand to smaller, more fuel-efficient cars. Small cars (sub-compacts and compacts) including imports accounted for 47 percent of total new car sales in 1978. Their market share increased to 55 percent in 1979 and 62 percent in 1980 and will reach an estimated 64 perent in 1981. The share for small cars now appears to be leveling off, however, with considerable uncertainty as to the future trend.

Domestic car producers were not prepared for the abrupt shift in consumer preference to smaller cars. When the change began in earnest in the spring of 1979, only two families of domestically produced "new design" small cars (front wheel drive) were available. Lacking production capacity for "new design" small cars, domestic manufacturers lost substantial market share to imports during 1979 and 1980. Since 1979, the domestic industry has introduced additional new small models and converted substantial production capacity to their manufacture. The companies, therefore, now have capacity to produce four million "new design" small cars annually, compared to a 1981 annual sales rate of only about 2.1 million units.

Poor Sales Restrain Output

Sluggish sales and high inventories have restrained domestic output over the past several months. Production schedules have been cut back repeatedly to regain control of inventories. Based on current schedules, domestic production for 1981 will total a disappointing 6.3 million cars, 1.6 percent below last year's output, and the lowest since 1961. Domestic light truck output is no more promising, with only 1.55 million units scheduled for assembly this year. Although 11 percent above a year ago, 1981's light truck output will be 53 percent below the 1978 record.

Since late 1979, unemployment has been widespread in the industry. Unemployment peaked in August 1980 with 250,000 production workers — 32 percent of the hourly work force — and 50,000 salaried workers indefinitely laid off by the manufacturers. At the same time, unemployment among domestic parts and component manufacturers, and other automotive suppliers, reached an estimated 650,000.

(Continued on page 22)

Movements in Cost of Operating a Car, January 1978-September 1981
(BLS price indexes seasonally adjusted converted to January 1978 = 100)

	Repairs and Maintenance	Gasoline	Other Personal[1] Transportation Commodities	Other Personal[2] Transportation Services	Total Operating, Repair, Finance and Insurance Costs[3]
January 1978	100.0	100.0	100.0	100.0	100.0
January 1979	109.1	110.2	106.9	105.1	108.0
January 1980	120.3	176.3	121.6	114.4	142.2
January 1981	133.4	203.1	131.5	127.4	160.9
October 1981	142.1	213.0	137.2	136.7	170.0

---

[1] Includes motor oil, coolant, tires and other vehicle parts and equipment.

[2] Includes insurance, auto finance charges, vehicle registration, rental fees.

[3] Combines price indexes for component elements with the following December 1977 price relatives: Repairs 1.516; gasoline 4.205; other transportation commodities 0.733; other transportation services 3.416.

The U.S. Auto Industry

(Continued from page 20)

The probability of automotive employment ever recovering to its 1978 peak is low. At that time, the U.S. auto industry indirectly employed approximately 1 million workers with another 1.4 million employed by the automotive supplier industry. Based on current projections of slow growth in domestic automotive demand and assuming the productivity gains required for regaining international competitiveness, the automotive industry, in comparison with the 1978 peak, will employ approximately 200,000 fewer workers in the mid-1980's. The supplier industry may suffer an employment loss in the range of 300,000 to 400,000 workers from the 1978 total.

In addition to the motor vehicle manufacturers and their suppliers, franchised dealers have also been severely affected by the depressed automotive market. Since 1979, 2,600 new car dealerships — 10 percent of the total — have closed; approximately 100,000 dealer employees have been laid off.

Interest Rates Deter Sales

High interest rates are often identified as a major deterrent to new car sales. Potential (retail) buyers certainly consider rates and total interest charges as part of the purchasing decision. Interest costs increased by 76 percent from the first quarter of 1978 to the third quarter of 1981. However, the magnitude of the monthly payment tends to be the more important consideration. In this regard, average new car payments as a percent of disposable personal income per household declined slightly from 1978 to 1980, in spite of car prices averaging 48 percent higher and auto loan interest rates increasing from 13 to 16 percent during this period.

The rise in monthly payments was somewhat constrained by an increase in loan duration from 42.9 to 45.1 months. Although higher this year than in 1980, car payments as a percent of disposable personal income per household are lower than in 1976 and 1977, when the new car market was healthy. Even though interest rates may not be the primary factor affecting new car purchase decisions, they do have an adverse psychological impact on prospective buyers and also result in lending institutions being more restrictive with their funds. The disqualification rate for new car loans has been higher than normal in recent months.

Yearly Expenditures on Personal Transportation As a Percent of Personal Consumption

Year	Motor Vehicle and Parts	Gasoline and Oil	Services	Total
1970	5.8%	3.6%	2.5%	11.9%
1971	6.8%	3.6%	2.7%	13.1%
1972	7.1%	3.4%	2.7%	13.2%
1973	7.0%	3.5%	2.5%	13.0%
1974	5.6%	4.1%	2.4%	12.1%
1975	5.7%	4.1%	2.4%	12.2%
1976	6.7%	4.1%	2.5%	13.3%
1977	7.1%	4.0%	2.7%	13.8%
1978	7.0%	3.9%	2.7%	13.6%
1979	6.3%	4.5%	2.8%	13.6%
1980	5.5%	5.1%	2.6%	13.2%

Trend of Domestic vs. Imported New Car Prices 1978 to 1981 by Quarter

		Average domestic car price*	Average imported car price*	Average price for all new cars
1978	Q1	$6,237	$5,511	$6,096
	Q2	6,452	5,787	6,338
	Q3	6,578	6,007	6,476
	Q4	6,633	6,541	6,617
1979	Q1	6,790	6,597	6,751
	Q2	6,709	6,670	6,700
	Q3	7,011	6,930	6,995
	Q4	7,084	6,741	7,001
1980	Q1	7,303	7,445	7,340
	Q2	7,474	7,271	7,418
	Q3	7,741	7,497	7,676
	Q4	8,085	7,549	7,938
1981	Q1	8,129	8,208	8,150
	Q2	8,501	8,910	8,618
	Q3	8,988	9,125	9,020

* Average new car prices computed by the Bureau of Economic Analysis.

> ***"In addition to the motor vehicle manufacturers and their suppliers, franchised dealers have also been severely affected by the depressed market."***

Revenue of the Big Four automakers fell from $122 billion in 1978 to $106 billion in 1980, recovering only to an estimated $111 billion in 1981. Over the same period net income fell from a profit of $5 billion in 1978 to a $4.2 billion loss in 1980 and an estimated loss of $1.4 billion in 1981. The estimate of 1981 net income is heavily dependent upon assumptions concerning tax credits. In the third quarter of 1981, tax credits of $700 million significantly reduced the size of the net income loss.

Since 1978, cash flow pressures have been intense. The Big Four experienced negative cash flows of $2.5 billion in 1979 and $9.1 billion in 1980. Depending on assumptions for the fourth quarter, the 1981 cash flow could be negative by as much as $6.4 billion. The most startling trend of all is the drastic rundown in the working capital of auto producers. At year end 1978 their combined working capital was $13 billion; at the close of the third quarter of 1981 their actual working capital was $300 million. By the end of 1981 they could be

(Continued on page 26)

The U.S. Auto Industry

(Continued from page 22)

showing, combined, a zero working capital. Under pessimistic assumptions it could fall to a negative $900 million.

Estimates for the total cost of the 1978 through 1985 changeover for United States/Canada operations of the domestic motor vehicle industry, including start-up costs, run around $65 billion. The Transportation Systems Center estimates that roughly half of this investment program has now been completed. As this report makes clear, however, severe cash flow pressures could force the auto manufacturers to postpone completion of the second half of the program. In recent months announcements of investment stretchouts or postponements have become regular features in the auto trade press.

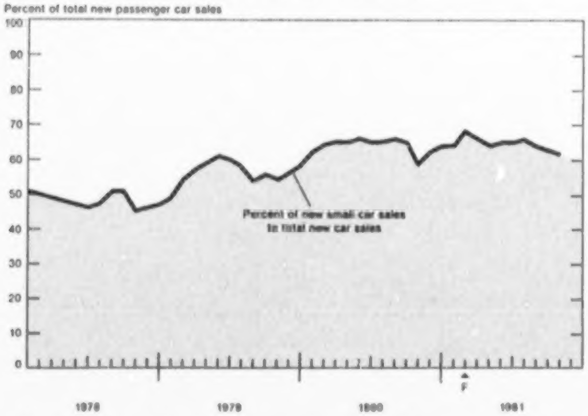
Machine Tool Sales Suffer

A recent survey among machine tool manufacturers suggests that cancellations by the auto producers will amount to a loss of $1.5 billion to $2.0 billion in machine tool business. New orders for automotive machine tools are currently running at no more than 50 percent of their level in 1980.

Unlike the previous automotive industry recessions, the present slump is not entirely cyclical in nature. In addition to cyclical influences, the downturn in domestic-make sales also reflects an apparent slowdown in the long-term growth of demand for automobiles together with the impact of sharply intensified international competition for the U.S. market. The slower growth rate for automotive demand results from demographic factors, the erosion of consumer purchasing power by inflation, and the sizeable increase in the relative price of owning and operating a car.

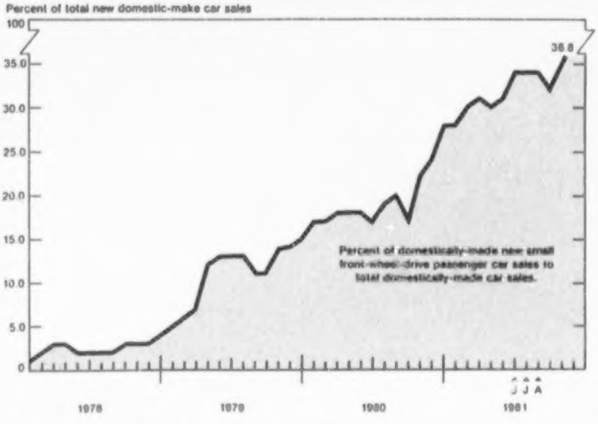
The recent decline in the growth rate of the driving age population has slowed the growth of automotive demand. Between 1979 and 1980, the growth rate of persons aged 18-24 (which includes many first-time car buyers) was less than half of the 2.3 percent annual growth rate between 1970 and 1975. Moreover, the number of people in this age group will actually decline by 1985.

NEW SMALL PASSENGER CAR* SALES (Including Imports)



*Small passenger cars include subcompacts and compacts.

NEW DOMESTIC-MAKE SMALL FRONT WHEEL-DRIVE PASSENGER CAR* RETAIL SALES



*Small passenger cars include subcompacts and compacts.

The rate of increase in consumers' real income has slowed markedly over the past five years. Moreover, because prices for food, energy, and shelter have increased at a more rapid pace than other items, the squeeze on discretionary real income has been even more pronounced. Improvement in real income is critical to the restoration of a more normal level of car buying.

> ***"Reflecting a combination of uncertain economic conditions, high interest rates, and high car prices, sales of domestic-make cars have been sluggish all year . . ."***

Over the period 1971-1980, consumers spent a relatively constant share of their total expenditures on owning and operating automobiles. These outlays include purchase of new and used cars, gasoline and oil, insurance, financing costs, repair, leasing, and other service fees. The automotive-related share varied from a low of 11.9 percent of personal consumption expenditures in 1970 to a high of 13.8 percent in 1977. During the first half of 1981, the share was 13.2 percent despite depressed new car sales — a consequence of rapidly rising costs of financing, insuring, maintaining, and operating a car. Since January 1978, these costs have increased by 70 percent, more than double the 34 percent increase in new car prices.

(Continued on page 28)

The U.S. Auto Industry

(Continued from page 26)

Higher gasoline prices, which have increased annual fuel costs almost $500 per car since 1972, have an additional effect on long-term automotive demand. In response to higher gasoline prices, consumers are changing their driving habits. The average number of miles driven per year has dropped from 10,184 per car in 1972 to an estimated 9,400 miles in 1980. The reduced usage of cars can be expected to lead, ultimately, to lower replacement demand.

> ***"The slower growth rate for automotive demand results from demographic factors, the erosion of consumer purchasing power by inflation, and the sizeable increase in the relative price of owning and operating a car."***

Consumer perceptions of the quality of domestic cars relative to imports, in particular Japanese produced vehicles, are undoubtedly an important factor in the current domestic car sales slump. Several recent consumer attitude surveys show consistently higher quality ratings for imports. A poor quality image is difficult to turn around and the shift unfortunately requires an extended period of time. Quality is fundamentally a question of the priority which management and labor are willing to assign it. There is considerable evidence that both groups now recognize its importance to the industry's recovery. Achievement of quality levels competitive with imports — and consumer recognition of this condition — is certainly imperative for domestic industry recovery.

Lack of competitiveness in manufacturing costs threatens the U.S. auto industry's long-term viability and is its most difficult challenge. Japanese manufacturing costs are substantially below U.S. costs for a comparable car, due to lower hourly compensation, productivity advantages from a more advanced manufacturing technology, and more effective systems for controlling inventory, product quality, and workplace activity. Recent studies indicate Japanese manufacturers can land cars in this country for as much as $1,000 to $1,500 per car less than U.S. producers can deliver comparable vehicles to the same destinations.

New Car Payments as Percent of Disposable Personal Income per Household

Average Car Loan

	Contract Price	Interest Rate	Loan Duration	Lifetime Interest Expense	Monthly Payment	Payment as of Disp. Pers. Income
1978	$5696	13.1%	42.[illegible] Mos.	$1460	$166.81	10.4%
1979	$6046	13.5%	44.3 Mos.	$1667	$174.11	9.8%
1980	$6476	14.9%	44.7 Mos.	$1993	$189.47	9.9%
1981	$7654	16.0%	45.1 Mos.	$2576	$226.84	10.9%

* Average new car monthly payment as a percent of Disposable Personal Income per household.

Increased Foreign Sourcing

One means by which auto manufacturers are trying to reduce costs and become more competitive is through increased foreign sourcing. The Transportation System Center closely monitors projected foreign sourcing plans of the domestic auto manufacturers. Based on what the companies have publicly announced over the last year or so, it is estimated that during the 1982-84 period, in any single year, the domestic producers may be drawing on foreign sources for the following quantities of auto components:

Item	Million Units
Engines	2.5
Transaxles	1.7
Aluminum Cylinder Heads	1.3
Alternators/Starters	1.5
Wiring Harnesses	5.0
Rear disk Brakes	.5
Constant Velocity Joints	.6

It should be noted that these figures stand totally apart from traditional imports of replacement parts for both U.S. made and imported vehicles. Rough estimates of what the list might add up to in dollar terms is about $2.5 billion.

Modernization of Facilities

A substantial portion of the industry's current investment program involves the modernization of manufacturing facilities to achieve the productivity improvements necessary for regaining international competitiveness. The eventual success of this program, which planned for completion by the mid-1980's, is difficult to predict, particularly in view of the unfavorable near term cash flow outlook and the already announced postponement of some investment plans. In addition, the Japanese industry will not be standing still during this period and can be expected to enhance its competitive position with further product and manufacturing advances.

Commensurate with the uncertain outlook regarding the length and depth of the current recession, forecasts of 1982 U.S. new car sales currently vary widely. Three months ago most forecasts fell within the 10.0 to 10.5 million range; currently the forecasts are between 9.0 and 9.5 million cars, including 2.3 to 2.4 million imports. The outlook is for continuing heavy cash flow pressures on the domestic indus-

(Continued on page 35)

The U.S. Auto Industry

(Continued from page 28)

try until late 1982. Industry analysts are still expecting the recovery to generate high volume sales in 1983 and 1984.

Manufacturers Face Challenge

Although the pressures on cash flow will ease as the industry recovers from the recession, profits may still be relatively low and financing of investment difficult. The larger-size cars and the luxury models have historically had higher profit margins, while small cars generally have had low, and in some instances, negative margins. Average profit margins will tend to be held down as small cars increase their market share. This situation reflects the influence of import pricing, which, to a considerable degree, controls domestic small-car pricing. To achieve some degree of profitability in the small car business, domestic manufacturers will promote optional equipment and introduce small luxury and specialty models. During the 1980's, manufacturers will face a major challenge in developing a fleet of cars with a product mix that can provide an adequate return on investment. ■

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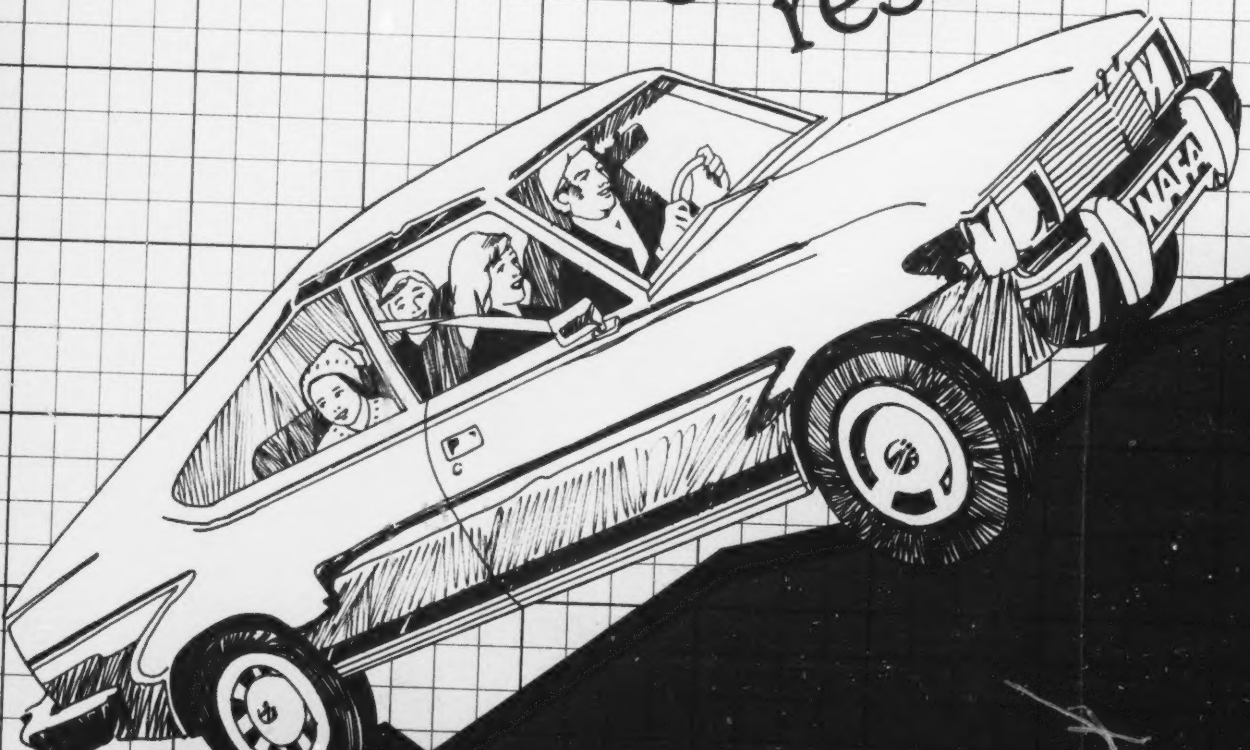
NAFA

Bulletin

The Magazine for Fleet Administrators

February 1982

personal use survey results



NAFA BULLETIN MARCH 1982

- NEWS HIGHLIGHTS 3
- LETTERS 4
- INSURANCE INSTITUTE SAYS SMALL CARS CAN BE MADE SAFER 6
- SAFETY — WHO NEEDS IT? 8
- USING REAR SEAT BELTS REDUCES INJURIES 28 PERCENT 15
- SAFETY 21
- BOARD OF GOVERNORS APPROVE NEW CHAPTER 24
- MVMA's GLOSSARY 27
- 10 FOOL PROOF WAYS TO CONSERVE GASOLINE 28
- NAFA's HOTLINE 30
- SOME GOV'T FLEETS SWITCHING TO USED CARS 32
- CHAPTER NEWS 34
- WHOLESALER/BROKER DIRECTORY 35
- DIRECTORY OF AUTO AUCTIONS 36
- DIRECTORY OF FLEET CAR DEALERS 38

NAFA
NATIONAL ASSOCIATION OF FLEET ADMINISTRATORS, INC.
295 Madison Ave., New York, N.Y. 10017

Reimbursement and Chargebacks Climb to New Highs:

NAFA's Survey Finds Most Fleets Pay 20¢ or More

NAFA Exclusive

Reimbursement rates for the use of personally owned cars for business purposes continued to climb to new highs in 1981 while chargebacks for personal use of the company provided car also continued to rise, but at a slower rate, according to NAFA's annual personal use survey.

A total of 204 fleets operating 139,050 passenger cars participated in the 1981 survey. Included in the group were 19 Canadian fleets; 10 U.S. government fleets, and 12 U.S. public utility fleets.

Among the survey's highlights are:

- Twenty cents per mile has become almost the standard reimbursement rate for use of a personal car for business.
- For the first time since the Association started compiling data on personal use, more fleets are charging a flat monthly or weekly personal use chargeback rather than a straight mileage chargeback.
- At the same time the number of fleets collecting the personal use chargeback by means of a salary deduction has jumped dramatically — from less than one in three to more than two of every five fleets.

Drug & Cosmetic Group

The Drug & Cosmetic Group consists of 24 fleets operating 20,073 passenger cars (1,510 company owned; 18,507 leased, and 56 employee owned). Every fleet in the group permits personal use of the company-provided vehicle and only one fleet places any limitations on the number of personal miles permitted.

All but one fleet permit the company car to be driven after working hours, on weekends and holidays and all but one permit it to be used for vacation travel.

Every fleet in the Drug & Cosmetic Group charges its employees for personal use. Thirteen fleets have a straight mileage charge — four charge 12 cents a mile; three set the rate at 10 cents; two at eight cents, and one each charge 9, 11, and 13 cents a mile.

The fleets whose personal use chargeback is a flat monthly or weekly rate have these charges: $50 a month, 1; $30 a month, 1; $25 a month, 1; $20 a month, 1; $7 a week, 1; $5 a week, 1. One fleet has a rate that varies from $18 to $22 a month depending on car assignment.

Four fleets in the group base their personal use chargeback on a combination of flat rate and mileage: $50 a month plus 6 cents a mile, 1; $24 a month and 7 cents a mile, 1; $15 a month plus 7 cents a mile, 1; and $6 a week and 6 cents a mile, 1.

> ***"Reimbursement rates for the use of personally owned cars for business purposes continued to climb to new highs in 1981 while chargebacks for personal use of the company provided car also continued to rise, but at a slower rate..."***

Sixteen fleets collect for personal use by means of an expense report deduction; seven collect through a salary deduction, and one fleet that uses a combination chargeback has the mileage portion deducted from the employee's expense account, and the fixed rate deducted from the salary check.

One fleet in the group restricts personal use to the employee only; the other 23 permit the spouse to drive the company-provided car, and 19 extend the driving privilege to licensed children. Three fleets allow "others" to use the company car.

Only seven fleets in the group have set specific age limits for drivers and seven fleets charge a portion of the repair costs resulting from accidents during personal use to the employee. Three fleets said it was a dollar amount (usually $100) and three fleets said it was the "insurance deductible."

Fourteen fleets said that the employee or assigned operator was "charged" with an accident if another person was driving the company car when the accident occurred.

Use of Personally Owned Cars

The great majority of fleets in the Drug & Cosmetic Group base assignment of a company car on "job title." Only four fleets said business miles was the determining factor — two set the mileage at 10,000 miles a year; one each at 12,000 and 25,000. One fleet reported that "fringe benefit" was a consideration in assignment of a company car.

In reimbursing an employee for the use of a personally-owned car (when there is no assigned fleet car) 18 fleets in the group have a fixed mileage rate; one pays a flat dollar amount ($225 a month), and two pay a fixed amount plus mileage. In both of these fleets it is $120 a month plus 10 cents a mile. Among the fleets with a mileage reimbursement, 12 pay 20 cents a mile; 2 pay 17 cents; and one each pay, 18¼; 18½; 21; 25 and 30 cents a mile.

When the assigned fleet car is not in service and the employee uses a personally owned car, every fleet in the group reimburses on a mileage basis. Again, 20 cents a mile is the most frequently used rate — 13 fleets. The others (one each) pay 12 cents; 17 cents; 18¼; 18½; 19 cents; 21, and 25 cents a mile.

Compensation for Loss of Car

Eight fleets in the Drug & Cosmetic group said that they make a one time payment to compensate employees for the loss of the vehicle when they are no longer eligible for a company provided car. Three fleets pay the value of a one year old car; one each pay $5,100 net; $3,200, $4,000. Two fleets give the employee $1,500, and one fleet gives him a choice of retaining the car for 24 months and paying the taxes on the imputed value of the car or getting $1,400 plus $100 a month for 24 months with an option to buy.

Eleven fleets offer the car to the employee if he is transferred or promoted to a position that doesn't call for assignment of a company car. Seven set the price at "wholesale market value." One each say they will sell the car for "clean wholesale or lease book value; AMR; book value, and AMR minus 5 percent.

Food & Beverage Group

The Food & Beverage Group consists of 17 fleets operating 9,729 passenger cars (3,208 company owned and 6,521 leased vehicles).

Every fleet in the group permits personal use of the company provided car after working hours, on weekends, holidays, and vacations. One fleet places an unspecified limit on personal use, defining it merely as "use good judgement."

Every fleet but one charges for the personal use of the company provided vehicle. Eight fleets assess a straight mileage charge — two each charge 8 and 10 cents a mile; one each charges 9 and 13 cents a mile. While one fleet charges "fuel only."

Personal Use Chargebacks
For Fleets Using A Straight Mileage Charge
U.S. Commercial Fleets Only

Amount	1978	1979	1980	1981
7¢ or less	47%	16%	14%	2%
8, 9 or 10¢	35%	63%	44%	43%
More than 10¢	18%	21%	42%	55%

Seven fleets have a flat weekly or monthly charge for personal use. They include $35 a month by two fleets. Others (one each) charge $65 a month; $25 a month; $8 a week, and $3 a week. In one fleet the charge ranges from $25 to $50 a month depending on car assignment. Two fleets in the group use a combination charge of a flat rate plus mileage. In one fleet it is $20 a month plus 5 cents a mile; in the other it is $30 a month plus 10 cents a mile for all mileage over 300 miles.

Nine fleets in the group collect the personal use chargeback through an expense report deduction; seven collect it by means of a salary deduction.

Every fleet in the group permits the company car to be driven by both the employee and spouse. Eleven fleets permit use by licensed children, while one fleet extends the driving privilege to "others" if they are company employees.

> ***"Twenty cents per mile has become almost the standard reimbursement rate for use of personal car for business."***

Eight fleets have set minimum age limits for driving the company car, but only two charge the employee for repair costs of an accident that occurs during personal use. One fleet charges a fixed share "if the accident was found to be preventable," while the other assesses the insurance deductible to the employee.

Ten fleets in this group "charge" the employee with an accident if another person was driving the company car when the accident occurred.

Use of Personally Owned Cars

Within the group the majority of fleets report that company car assignment is based on job title, but four fleets require a specific number of business miles to be driven in a year — 15,000 miles, 1 fleet; 17,000, 1; and 20,000 miles a year, 2. Four fleets said "fringe benefit" was a consideration in company car assignment.

Reimbursement for use of a personally owned car (when there is no assigned fleet car) is based solely on a mileage rate in all but one fleet. Eight fleet managers reported the rate was 20 cents a

(Continued on page 8)

Personal Use Survey Results

(Continued from page 7)

mile; one each said it was 19 and 21 cents. One fleet paid a fixed amount of $310 a month.

When the assigned fleet car was not in service, every fleet in the group reimburses the employee for use of a personally owned car on a straight mileage basis. Seven fleets pay 20 cents a mile; two fleets pay 21 cents; and one each pays 15 and 19 cents a mile.

Compensation for Loss of Car

Five fleets in the Food & Beverage Group provide direct compensation to an employee who is no longer eligible for a company car. Each of the five has its own formula: $4,000; $3,000 before taxes; two months salary up to a maximum of $6,000; one year's operating expenses, and $2,300 less tax, plus an additional $300 a year added to the employee's salary.

Four fleets offer to sell the car to an employee who is no longer eligible to have one. The prices range from "wholesale value," "depreciated value at 2 percent plus $300;" "book value," and "10 percent below AMR."

Insurance Group

The Insurance Group is represented by 38 fleets operating 38,496 passenger cars (22,995 company owned; 14,043 leased, and 1,458 employee owned).

Every fleet in the group permits personal use of the company provided vehicle after working hours, on weekends and holidays, and on vacations. Six fleets place limits on the amount of personal use permitted. These limitations vary from 10 percent of business miles to under 500 miles on vacation travel. Others merely state "reasonable."

Every fleet in the Insurance Group except one charges for personal use. Fifteen have a straight mileage chargeback — four fleets charge 14 cents a mile; two each charge 10 and 17 cents a mile; one each set the rate at 8, 12, 12½, 13, 15, 16, 17½ cents a mile.

Reimbursement For Use Of Personal Car
Mileage Only
(No Assigned Fleet Car)
U.S. Commercial Fleets Only

Rate	1977	1978	1979	1980	1981
15¢ or less	72%	64%	19%	3%	1%
16¢ a mile	6%	5%	3%	—	—
17¢ a mile	10%	24%	45%	17%	3%
18¢ a mile	3%	2%	22%	19%	8%
19¢ a mile	9%	6%	11%	7%*	2%
20¢ a mile	**	**	**	43%	68%
More than 20¢ a mile	**	**	**	11%	17%

NOTES:
***Includes only those mentioning 19¢ a mile specifically; in earlier surveys it included all fleets paying 19¢ a mile or more.**
****Not broken out in surveys for those years.**

Reimbursement For Use of Personal Car
Mileage Only
(Assigned Fleet Car Not In Service)
U.S. Commercial Fleets Only

Rate	1977	1978	1979	1980	1981
15¢ or less	74%	66%	13%	4%	3%
16¢ a mile	7%	8%	4%	—	—
17¢ a mile	9%	23%	53%	15%	3%
18¢ a mile	—	2%	21%	20%	9%
19¢ a mile	9%	2%	9%	6%*	3%
20¢ a mile	**	**	**	43%	66%
More than 20¢ a mile	**	**	**	11%	17%

NOTES:
***Includes only those mentioning 19¢ a mile specifically; in earlier surveys it included all fleets paying 19¢ a mile or more.**
****Not broken out in surveys for those years.**

Fourteen fleets have a flat weekly or monthly charge for personal use of the company car. Three fleets charge $50 a month; two charge $25 a month. Other rates (by one fleet each) are $30 a month; $33 a month; $28 a month; $20 a month; $20/$25 a month. Weekly charges include $8 a week and $20 a week. One fleet charges $720 a year.

Seven fleets have other methods of charging for personal use. They include one fleet that varies its charge from 15 to 18 cents a mile depending on the employee's safe driving record. Combination of flat charges and mileage rates include $39 a month plus 13 cents a mile over 300 miles a month; $5 to $20 a month plus 20.9 cents a mile; $40 a month plus 9 cents a mile over 100 miles each month; $30 a month plus gas and oil; $10 a month plus 10 cents a mile, and $35 a month plus 12 cents a mile.

Within the Insurance Group, 19 fleets collect the personal use chargeback through an expense report deduction; 11 fleets use a salary deduction. Three fleets add the personal use chargeback to the employee's W-2 form as additional income, while one fleet treats the "cost of personal miles on the payroll as a bonus for tax purposes but does not apply toward retirement."

One fleet in the insurance group restricts personal use to the employee only; every other fleet permits the employee and spouse to drive the company car; 12 fleets extend the driving privilege to licensed children, and three permit "others" to use the car.

Nine fleets in the group have set minimum age limits for driving privileges and 16 charge the employee some portion of the repair costs resulting from accidents that occur during personal use. One

(Continued on page 10)

Personal Use Survey Results

(Continued from page 8)

fleet charges the full amount; seven have a dollar amount (usually either $50 or $100) while 8 fleets charge the "insurance deductible."

Twenty fleets in the Insurance Group "charge" the employee with an accident if another person was driving the car when the accident occurred.

Use of Personally Owned Cars

In assigning company cars to employees, 19 fleets in the Insurance Group reported that business miles driven was a determining factor. The most often mentioned figure was 12,000 miles a year (9 fleets). Three fleets said their requirement was 15,000 miles; two each said it was 10,000 and 20,000 miles, while one each said it was 8,000, 6,500, and 6,000 miles a year.

Two fleets reported that time spent in the field and the use of a car during a week (3 times a week) were factors in company car assignment. The other fleets in the group said job title determined car assignment.

To reimburse employees who drive their personally owned cars on business (when there is no assigned fleet car) 33 fleets used a straight mileage fee. In 22 fleets it is 20 cents a mile; three fleets each pay 18 and 21 cents a mile. Other reimbursement rates are (each by one fleet): 17 cents; 22½; 23, and 31. One fleet pays $270 a month plus 10 cents a mile. Three fleets have a graduated scale for reimbursement. In one it is 18 cents for the first 2,400 miles and 20 cents for the next 5,600 miles; another pays 22 cents for the first 10,000 miles and 17 cents for all additional mileage; the third 22 cents for the first 10,000 miles, 18 cents for the next 5,000 miles, and 10 cents for any additional mileage.

Reimbursement for employees who drive their personally owned cars when an assigned fleet car is not in service is completely on a mileage basis. In 20 fleets the reimbursement rate is 20 cents a mile. Four fleets pay 18 cents; three pay 21 cents; two pay 22 cents. Other reimbursement rates are 10 cents, 1; 17, 1; 18½, 1; 22½, 1; 23, 1; and one fleet pays 31 cents a mile.

Compensation for Loss of Car

Seventeen fleets in the group provide cash compensation for employees who are no longer eligible to have an assigned company car. Four fleets said the payment was $1,500; three said it was $1,200, and two each set it at $2,500 and $2,000. Other payments, each by one fleet, are $1,000; $1,800 and $7,500. One fleet pays two-thirds of one month's salary; another pays $600 plus six cents a mile times all the personal miles driven in the previous 12 months. One fleet reported it paid employees $7,500 or the AMR wholesale clean value of the car, while another fleet permitted the employee to continue the lease at a rate of $175 a month.

Thirteen fleets in the group reported they would sell the company provided fleet car to an employee who was no longer eligible to have one. In most cases the price was NADA average trade minus 25 percent; another said it was the book value computed at two percent depreciation per month. One fleet said it would "sell the car at Redbook wholesale and finance a 24 month interest free loan."

Chemical & Petroleum Group

The Chemical & Petroleum Group segment of the 1981 personal use survey consists of 22 fleets operating 19,974 passenger cars (7,424 company owned; 12,416 leased, and 134 employee owned).

Four fleets in the group do not permit personal use of the company provided car. The other 18 respondents permit the personal use of the car after working hours and on weekends and holidays. Two fleets do not permit the company car to be used for vacation travel. The policy statement on personal use of one fleet states, "Vehicles are provided to employees for the performance of their business responsibilities and not for their personal use or convenience. Personal use, if any, of a company vehicle is restricted to occasional domestic needs within the employee's community only."

Of those fleets that do permit personal use, all but one charge for such personal use. Eight fleets have a straight mileage chargeback. Two fleets charge 8 cents a mile, while one each have a chargeback of 10, 11, 12, 13, 16, and 23 cents a mile. Five fleets have a flat monthly or weekly assessment for personal use. The rates are $20 a month; $35 a month; $39 a month; $50 a month, and $60 a month. Two fleets have a combination chargeback. In one fleet it is $55 a month plus insurance premium; in the other it is 10/12 cents a mile plus $20/25 a month.

In collecting the personal use chargeback, eight fleets use an expense report deduction; five have a salary deduction plan; three add the amount to the employee's W-2 form as additional income at the end of the year; one fleet asks the employee to pay by check to the company.

Four of the 18 fleets that permit personal use of the company car restrict such use to the employee alone. Fourteen fleets permit both the employee and spouse to use the car, and six fleets extend the driving privilege to licensed children. No fleet in the group permits "others" to use the vehicle.

Three fleets in the group at least a portion of the repair costs resulting from an accident during personal use to the employee. In two fleets it is the full amount, while in the third fleet it is the "insurance deductible."

Use of Personally Owned Cars

Thirteen fleets in the group have established a minimum number of business miles to be driven before a company car is assigned to an employee. Four fleets each set the number at 12,000 and 15,000 miles year. Two fleets require 20,000 miles, while one each have a requirement of 8,000, 10,000 and 18,000 business miles a year.

One fleet states that an employee must need a car 50 percent of the time before one is assigned; another fleet gives as the requirement "frequent need."

In reimbursing employees for the use of a personally owned car for business, when there is no assigned fleet car, every fleet but two uses a straight mileage rate. In 15 fleets the rate is 20 cents a mile. The other fleets (one each) pay 18 cents; 19; 22; 23, and 28.2 cents a mile. One fleet pays $195 a month plus the cost of fuel, and one fleet has a graduated scale of 20 cents a mile for the first 900 miles driven in a month and 11 cents a mile for any additional mileage.

> ***"For the first time since the Association started compiling data on personal use, more fleets are charging a flat monthly or weekly personal use chargeback rather than a straight mileage chargeback."***

The reimbursement rate for use of a personal car when the fleet car is not in service is on a straight mileage basis in all fleets. In 14 fleets the rate is 20 cents a mile. The other fleets in the group (one each) pay 17, 19, 22, 23, and 28.2 cents per mile. One fleet pays 20 cents for the first 900 miles and 11 cents for additional mileage.

Three fleets in the group have specific policies for compensating an employee who loses eligibility for a company car. In one fleet it is a $4,800 per year salary increase; another fleet offers an interest free loan up to a maximum of $7,500; a third fleet says its salary increase ranges from $1,000 to $2,500. Several fleets said they have a compensation policy but that it "varied" according to employee.

Five fleets in the Chemical & Petroleum Group said they would sell the car to an employee who was no longer eligible to have one assigned. The prices were AMR; 75 percent of the wholesale price; 80 percent of AMR; 90 percent of AMR, and the "higher of book value or Black Book average."

Manufacturing-Industrial Group

The Manufacturing-Industrial Group segment of the personal use survey consists of 31 fleets operating 19,212 passenger cars (1,273 company owned; 16,556 leased, and 1,383 employee owned).

Every fleet in the group permits personal use of the company provided car after working hours and on weekends and holidays. Two fleets do not permit the company car to be used for vacation travel. Three fleets within the group place some limitation on personal use — in one fleet it is 300 miles per month, while another's policy is to limit vacation travel to no more than 1,000 miles.

Twenty-four fleets in the group charge for personal use of the company car; seven do not charge. Only four fleets in the group have a straight mileage chargeback — one fleet each charged 8, 10, 12, and 13½ cents a mile.

Fourteen fleets have a flat monthly or weekly chargeback system. Two fleets charge $50 a month. Every other fleet assesses a different rate: $10 a week; $15 bi-weekly; $40 a month; $45 a month; $20 a week; $20 a month; $35 a month; $25 a month; $65 a month, and $125 a month. In two fleets the monthly charge depends on the assigned car — either $55 or $65 a month in one while in the other it ranges from $40 to $155 a month.

Five fleets in the group have a dual chargeback of both mileage and a basic flat rate. In one fleet it is $65 a month plus 13 cents a mile after 600 miles a month; another charges $48 a month and 11 cents a mile for driving beyond a 50 mile radius; other charges include $60 a month plus gasoline; $15 a week plus gasoline; $65 a month plus 5 cents a mile.

In collecting the personal use chargeback, seven fleets in the group use an expense report deduction; 13 make a salary deduction, while five fleets use both methods, with the fixed charge as a salary

(Continued on page 12)

Federal Government Reduces Reimbursement Rate

The average cost of operating a privately owned automobile on government business is 20 cents per mile, according to the General Services Administration. As a result of this finding, GSA has reduced its reimbursable rate from 22.5 cents to 20 cents per mile.

The Federal government is required by the Travel Expense Amendments Act of 1975 (Public Law 94-22) to periodically investigate the cost of travel and the operation of privately owned vehicles (automobiles, motorcycles, and airplanes) to employees while engaged on official business, according to W.M. Wilson, Chairman of NAFA's Government Relations Committee.

In announcing the cut in the reimbursement rate for use of privately owned automobiles, GSA stated, "The lower automobile operating cost is primarily a result of our having changed our automobile cost study methodology. Recently we decided to adopt as the basis for GSA's automobile cost investigation, a study on the cost of operating privately owned automobiles prepared for the Internal Revenue Service by Runzheimer and Company, Inc."

GSA added, "We estimate that this reduction in the mileage rate will result in approximately $25 million less in government mileage reimbursement expenses."

Personal Use Survey Results

(Continued from page 11)

deduction and the mileage charge as an expense report deduction. One fleet in the group adds $480 a year to the employee's W-2 form as additional income.

One fleet in the manufacturing-industry group limits personal use of the company provided car to the employee only; the others permit both the employee and spouse to drive the vehicle; 13 fleets extend the driving privilege to licensed children, and five permit "others" to drive the company car.

Fourteen fleets in the group have minimum age limits for use of the company car — three specific ages were mentioned: 18, 21, 25, with the highest (25) being the most frequent.

Twelve fleets in the group require the employee to pay a portion of the repair costs resulting from accident during personal use. Seven fleets said it was a dollar amount — usually $100 — while five said it was the "insurance deductible."

Seventeen fleets reported that the employee was "charged" with an accident if another person was driving the company car when the accident occurred.

Use of Personally Owned Cars

Sixteen fleets in the group said business mileage was one of the factors in determining assignment of company cars. Five fleets put the minimum at 12,000 miles; three said 10,000 miles a year; two each put it at 15,000 and 20,000; while one fleet each set the requirement at 18,000; 24,000; 25,000, and 30,000 miles a year.

In reimbursing an employee for use of a personally owned car, when there was no assigned fleet car, 22 fleet used a straight mileage rate; two paid a fixed amount plus mileage; two employ a graduated scale, and one said it used a "Runzheimer" schedule.

Among the fleets reimbursing on a straight mileage rate, 16 pay 20 cents a mile; two fleets each pay 18 and 21 cents a mile; the others pay 4, 22, 23, and 25 cents a mile.

One fleet with a graduated scale for reimbursement paid 17 cents for the first 200 kilometers and 15 cents for all succeeding mileage. The other fleet pays 20 cents for the first 1,000 miles and 11 cents additional mileage per month. The fleet with a fixed allowance plus mileage pays 7.5 cents per mile plus $133 a month.

In reimbursing employees for the use of a personal car when the assigned fleet car is not in service, all but two fleets used a straight mileage payment. Sixteen fleets pay 20 cents a mile; two each pay 18; 18½, and 21 cents a mile. The others (one each) pay 4 cents; 22, 23, and 25 cents a mile.

Only one fleet in the group reported that it made a cash payment to an employee who no longer was eligible to have a company car; the amount is $3,500. One other fleet reported that it permitted the employee to use the leased car for one year or until the end of the lease, whichever came first.

Eleven fleets reported they will sell the car to an employee who is no longer eligible to have one assigned. Three fleets set the price at "book value;" two said "AMR clean." In the other cases, it was "current AMR," 50 percent of book value, NADA wholesale, and in one case, simply "below market value."

Manufacturing-Consumer Group

The Manufacturing-Consumer Group of the personal use survey consists of 23 fleets operating 14,029 passenger cars (6,983 company owned; 5,974 leased, and 1,072 employee owned).

Every fleet in the group permits personal use of the company-provided car after working hours, on weekends and holidays. Only one fleet does not permit the company car to be used for vacation travel. Three fleets in the group place some limits on personal use — in two cases the limits deal with vacation travel; a limit of 1,000 miles in one fleet and the approval of the regional manager in the other. The third fleet states only that personal use should be "reasonable."

> ***"... fleets collecting the personal use chargeback by means of a salary deduction has jumped dramatically — from less than one in three to more than two of every five fleets."***

Two fleets in the group do not charge for the personal use of the company car; 21 do. Nine fleets have a straight pennies per mile chargeback; seven use a flat weekly or monthly rate, while three have a combination of both, and two fleets add the chargeback to the employee's W-2 form as additional taxable income.

Among the fleets with a mileage chargeback, three charge 10 cents a mile; one each charge 7, 12, 12½, 13½ and 14 cents a mile. Every fleet with a flat rate has a different one — $54 a month, $45 a month, $10 to $25 a month, $30 a month, $40 a month, and one fleet with a graduated scale of $5, $10, or $12 a week, "based on driver status."

The fleets with combination chargebacks fixed them at $6 a week plus 11 cents a mile and $20 a month plus 13 cents a mile over 200 miles a month.

Ten fleets collected the chargeback through an expense report deduction; seven use a salary deduction, while three fleets add the personal use chargeback to the employee's W-2 form.

Two fleets in the group restrict personal use of the company car to the employee; all others permit both the employee and spouse to drive the car. Eleven fleets in the group permit personal use by licensed children, and three fleets extend the driving privilege to "others".

Eight fleets in the group have minimum age limits for use of the company vehicle; in most cases it is 21 years of age.

(Continued on page 14)

Personal Use Survey Results

(Continued from page 12)

Eight fleets in the manufacturing-consumer group charge the employee a portion of repair costs resulting from accidents occurring during personal use. In four fleets it was a dollar amount, either $50 or $100; in four fleets it was the "insurance deductible," although one fleet stated that the employee paid "the full amount if driver was at fault."

Use of Personally Owned Cars

Seven fleets in the group use business miles driven as a factor in determining assignment of a company car. In two cases each it was 12,000 and 15,000 miles a year. In the other fleets the required business mileage was 6,000; 13,000, and 18,000 miles a year. Although a majority of the fleets in the group said "job title" was the basic determining factor in car assignment, five fleets added that it was also considered a fringe benefit.

In reimbursing employees for the use of a personally owned car on business when there was no assigned fleet car, every fleet but two based its payment on a straight mileage rate. In 14 fleets the reimbursement rate was 20 cents a mile. In the others it was (in one each) 15; 18, 22, 22½, and 25 cents a mile. Two fleets reimbursed their employees a fixed amount plus mileage — in one it was $187 a month plus 20 cents a mile; in the other it was $225 a month plus 9½ cents a mile.

In reimbursing employees for use of a personally owned car for business when the assigned fleet car was not in service, every fleet in the group used a straight mileage rate. In 16 fleets it was 20 cents a mile. Other reimbursement rates mentioned (each by one fleet) were 18; 22, 22½, and 23 cents a mile.

Six fleets in the group reported that they made a cash payment to an employee who because of promotion or transfer was no longer eligible for a company car. One fleet said the amount was $2,500; another said "$5,000 gross;" another put it at "AMR value of a one year old car," while one fleet said there was a salary increase of the monthly lease charge plus 33 percent.

Four fleets in the group said they would sell the car to the employee who was no longer eligible to have one assigned. The prices varied from "residual value" to "AMR" to "wholesale less $500."

Others

There are eight fleets in the small group that do not fit into the other segments of survey responses. They operate a total of 1,294 passenger cars (597 company owned, 697 leased).

Six of the eight fleets permit personal use of the company car after working hours, on weekends and holidays, and on vacations. None of the fleets permitting personal use place any limits on such use.

Four of the six fleets permitting personal use levy a charge for non-business driving; two fleets have no charge. All four fleets that do charge have a flat monthly or weekly rate. The chargebacks are: 15 percent of the lease cost per month; $11 a week; $60 per month; and 3/14 of the lease rate without tax plus $40 a month.

Three of the four fleets collect their chargeback through a salary deduction; the other has an expense report deduction program.

All six fleets permit both the employee and spouse to drive the company provided car; only one fleet extends the privilege to children. One fleet in the group charges the "insurance deductible" to the employee when there is an accident that occurs during personal use.

Use of Personally Owned Cars

Three fleets in the group reported that business mileage was a factor in determining assignment of a company car. In one fleet it was 15,600 miles a year; in another it was 20,000, and a third said the

(Continued on page 18)

Summary of Survey Responses

Group	Number of Fleets	Total Number of Cars	Company Owned	Leased	Employee Owned
Drug & Cosmetic	24	20,073	1,510	18,507	56
Food & Beverage	17	9,729	3,208	6,521	—
Insurance	38	38,496	22,995	14,043	1,458
Chemical & Petroleum	22	19,974	7,424	12,416	134
Manufacturing-Industrial	31	19,209	1,270	16,556	1,383
Manufacturing-Consumer	23	14,029	6,983	5,974	1,072
Other	8	1,294	597	697	—
Public Utility	12	4,912	4,036	361	515
Government	10	7,313	6,830	383	100
Canada	19	4,021	2,004	2,017	—
Total	204	139,050	56,857	77,475	4,718

Personal Use Survey Results

(Continued from page 14)

minimum was 10,000 business miles. One fleet responded that the criteria was "need for a vehicle to perform job."

Seven of the eight fleets in the group reimburse an employee for the use of a personally owned car (when there is no assigned company car) on a straight mileage basis. Three fleets pay 20 cents a mile; one each pay 17, 18, 19 and 23 cents a mile. One fleet reported that it reimbursed its employee on a "Runzheimer" schedule.

In reimbursing an employee for the business use of a personally owned car when the fleet car is not in service, seven fleets paid on a mileage basis. Three pay 20 cents a mile; one each pay 17, 18, 19, and 23 cents a mile. One fleet pays a combination of fixed amount plus mileage.

No fleet in the group makes a compensatory payment to an employee who loses eligibility for a company provided vehicle. Two fleets do offer the employee an opportunity to purchase the fleet car in such a situation. One fleet charges the "payoff price;" the other "fair market value."

Public Utility Group

The Public Utility Group is represented by 12 fleets operating 4,912 passenger cars (4,036 company owned; 361 leased, and 515 employee owned).

Five of the 12 fleets in the group permit personal use of the company car after working hours and on weekends and holidays. Two fleets, in addition, permit personal use of the company car on vacations. None of the five fleets permitting personal use place any limitations on such use.

All five fleets charge for the personal use of the company car. One fleet uses a mileage chargeback — 7 cents a mile. Two fleets have a flat monthly chargeback. In one case it is $35 a month; in the other it ranges from $75 to $95 a month.

One fleet collects through an expense report deduction; two others have a salary deduction, while a fourth adds the personal use chargeback to the employee's W-2 form as additional income at the end of the year.

Four of the five fleets permitting personal use restrict such use to the employee alone. One fleet permits the employee's spouse and licensed children to drive the company-provided vehicle.

One fleet in the group charges a portion of the repair costs resulting from an accident occurring during personal use to the employee — $200.

Use of Personally Owned Cars

In determining assignment of a company car, most of the public utility fleets use business miles as a factor. In five fleets the minimum number of miles required is 12,000. One fleet each requires the employee to drive 5,000; 6,000, and 18,000 miles to be eligible for a company vehicle.

In reimbursing an employee for business use of a personally owned car when there is no assigned fleet vehicle, all but two fleets pay on a straight mileage basis. In five fleets the rate is 20 cents a mile. One fleet each pays 18½; 20½, 21, and 22 cents a mile. One other fleet pays on a graduated scale of 20 cents a mile for the first 15,000 miles and then 11 cents a mile for additional driving. One fleet in the group pays 27 cents a mile for the first 250 miles, or $115 a month plus 16 cents a mile when the car is driven more than 250 miles a month.

In reimbursing employees for the use of a personally owned car when the assigned fleet vehicle is not in service, every public utility fleet in the survey uses a straight mileage rate. In six fleets the rate is 20 cents a mile; in one each it is 18½; 21, and 27 cents a mile.

None of the 12 fleets in the public utility group makes a compensatory cash payment to an employee who loses eligibility for a company car and none of the fleets in the group offer to sell the car to the employee who loses the privilege of using it.

Government Group

The Government Group participating in the personal use survey consists of 10 fleets operating 7,281 passenger cars (6,830 agency owned; 351 leased, and 100 employee owned).

Only one fleet in the government group permits any personal use of the assigned agency car; this agency places no limit on the personal miles driven, and makes no charge for such use.

Driving the government-provided car is restricted to the employee only.

Most government fleets assign cars on a permanent basis on the employee's job title, however, two fleets in the group do have minimum business miles driven as a factor in car assignment. In both cases, it is 12,000 miles a year.

Every fleet in the government group that reimburses an employee for the business use of a personally owned car when there is no assigned fleet car uses a straight mileage rate. In two fleets the rate is 20 cents a mile; one fleet each pays 17, 18½, 21, and 22½ cents a mile. One fleet reported it did not reimburse the employee for such use.

In the cases when an assigned fleet car is not in service, the government agencies once again reimburse for the use of a personally owned car on a mileage basis. In three fleets the rate is 20 cents a mile; in two fleets it is 18½ cents; in one each it is 17 and 22½ cents a mile.

None of the government fleets offers any compensation to an employee who because of transfer or promotion loses eligibility for an agency provided vehicle.

One government agency (a county) described its policy covering fleet cars in this manner: "There are three basic types of county provided transportation for staff use:

"Agency assigned — cars assigned to agencies based on job requirements for daily needs. Vehicles may be assigned within an agency to individuals that require full-time or substantial field work.

These cars must be returned to the work location or a county facility at the end of the work day.

"Take Home — Vehicles that may be taken home evenings and weekends by individuals who are on 24-hour call.

"Motor Pool — A small fleet of cars available to all agencies for intermittent or sporadic transportation requirements where full time assignment is not justified."

Canada

The Canadian segment of the personal use survey consists of 19 fleets operating 4,021 passenger cars (2,004 company owned and 2,017 leased).

Every fleet in the group permits personal use after working hours and on weekends and holidays. Only one fleet doesn't permit the company car to be used for vacation travel.

Three Canadian fleets do not charge for personal use; the other 16 do. The personal use charges vary widely among these fleets. Two of them have a straight mileage chargeback — six and nine cents a mile. One fleet permits 480 free kilometers per month then assesses a charge of 10 cents per kilometer.

Eight fleets have a flat monthly or weekly personal use chargeback. The fleets set the rate at $40 a month. One charge 2.5 percent of the car's capitalized cost per month; another charges one percent of the purchase value per month; another charges one-third of the lease cost (rent only) per month. One fleet charges $30 a month; another $90 a month; another $6.50 a week.

Three fleets assess combination chargebacks of a flat rate plus a mileage rate. In one fleet it is $50 a month plus 8 cents a kilometer; in another it is 7.5 cents a kilometer with a minimum charge of $5.25 a week. One other fleet charges $3 a week plus the cost of fuel for weekend and vacation travel.

One fleet in the group restricts personal use of the company car to the employee alone. The others extend the driving privilege to both the employee and spouse, and in 15 fleets the privilege is also given to licensed children. Four fleets permit the company vehicle to be driven by "others" — usually interpreted to mean members of the immediate family.

Twelve fleets in the Canadian group charge the employee a portion of repair costs resulting from

(Continued on page 29)

PERSONAL USE SURVEY SUMMARY

	U.S. Comm. Fleet Totals (163)		Drug & Cosmetics (24)		Food & Beverage (17)		Insurance (38)		Chemical & Petroleum (22)		Mfg. Industrial (31)		Mfg. Consumer (23)		Other (8)		Public Utility (12)		Government (10)		Canada (19)	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Employees Permitted Personal Use of Car?	157	6	24	—	17	—	38	—	18	4	31	—	23	—	6	2	5	7	1	9	19	—
After working hours	157	—	24	—	17	—	38	—	18	—	31	—	23	—	6	—	5	—	1	—	19	—
Weekends & Holidays	157	—	24	—	17	—	38	—	18	—	31	—	23	—	6	—	5	—	1	—	19	—
Vacations	151	6	23	1	17	—	38	—	16	2	29	2	22	1	6	—	2	3	—	1	18	1
Limits on Personal Use	15	142	1	23	1	16	6	32	1	17	3	28	3	20	—	6	—	5	—	1	—	19
Charge for Personal Use	143	14	24	—	16	1	37	1	17	1	24	7	21	2	4	2	5	—	—	1	16	3
Mileage Charge	58	—	13	—	7	—	15	—	10	—	4	—	9	—	—	—	1	—	—	—	4	—
Flat Charge	60	—	7	—	7	—	16	—	5	—	14	—	7	—	4	—	4	—	—	—	10	—
Both or Other	25	—	4	—	2	—	6	—	2	—	6	—	5	—	1	—	—	—	—	—	2	—
Collect for Personal Use																						
Expense Report	70		16		9		19		8		7		10		1		1		—		6	
Salary Deduction	52		7		6		11		5		13		7		3		3		—		9	
Other	21		1		1		7		4		4		4		—				—		1	
Use Permitted by:																						
Employee Only	9		1		—		1		4		1		2		—		4		1		1	
Employee & Spouse	148		23		17		37		14		30		21		6		1		—		18	
Employee & Children	72		19		11		11		6		13		11		1		1		—		15	
Employee & Others	15		3		1		3		—		5		3		—		—		—		4	
Age Limits Set	53	102	7	16	8	9	9	28	7	11	14	17	8	15	—	6	3	2	1		7	12
Repair Costs Paid For By Employee	50	107	7	17	2	15	16	22	3	15	12	19	9	14	1	5	2	3	—	1	12	7
Full Amount	3		—		—		1		2		—		—		—		—		—		—	
Fixed Share	1		—		1		—		—		—		—		—		—		—		—	
Dollar Amount	21		3		—		7		—		7		4		—		2		—		4	
Insurance Deductible	25		4		1		8		1		5		5		1		—		—		8	
Employee Charged for Accident	83	74	14	10	10	7	20	18	3	15	17	14	18	5	1	5	1	4	1	—	12	6

chapter news

Pittsburgh Chapter Donates $1,166 to Home for Crippled Children

Richard McNelis, LMV Leasing, Inc., presents Nancy Merrill, Community Relations Director, D.T. Watson, Home for Crippled Children, with check. Seated is Betty Patsko, fleet administrator, Koppers Company.

This past August, the Pittsburgh Chapter held its annual Golf Outing at the Edgewood Country Club in Pittsburgh, PA. Because the golf outing is held in the same fashion each year, Patricia Tarabek, past chapter chairman, and Richard McNelis, program committee representative, decided to make this outing something innovative as well as productive.

Therefore, a NAFA Charity Fund was initiated and contributions were requested, rather than the usual gifts and door prizes. The D.T. Watson Home for the Crippled Children was the recipient of this year's charity. "A check in the amount of $1,166.00 was presented to them," Richard McNelis said.

The golf "scramble" was enjoyed by 21 foursomes. The dinner that followed was attended by 105 chapter members, friends, and out-of-town guests.

Everyone participating in the day's events had the feeling of a day "well spent."

Personal Use Survey Results

(Continued from page 19)

an accident that occurs during personal use of the company car. In three fleets it is a dollar amount, ranging from a low of $50 to a high of $350. In the other fleets it is the "insurance deductible."

Twelve fleets also "charge" the employee with an accident if another person was driving the company car when the accident ocurred.

Use of Personally Owned Cars

Most of the Canadian fleets represented in the personal use survey assign company cars on the basis of job title. However, four fleets stated they had a minimum business mileage requirement. It varied from 8,000, 10,000, 15,000, and 18,000 miles.

In compensating employees for the use of a personally owned car (when there is no assigned fleet car) every Canadian fleet except one used a straight mileage reimbursement. A number of the Canadian fleets expressed their reimbursement rate in kilometers (a kilometer is .621 of a mile). There was no overall pattern among the Canadian fleets as there was among the U.S. fleets where 20 cents a mile was the predominant rate. The rates paid by Canadian fleets were 25 cents per mile, two fleets: 29 cents, two fleets, and 27 cents (17 cents per kilometer), two fleets. Other rates quoted were 16 cents per kilometer; 20 cents a mile; 23 cents a mile; 24 cents a mile (15 cents per kilometer); 26 cents, 31, and 32 cents a mile. The one fleet with a combination reimbursement paid $220 a month plus 8 cents a mile.

In reimbursing employees for business use of a personal car when an assigned fleet car was not in service, once again the Canadian fleets did not show the consistency apparent in U.S. sales and service fleets.

Two fleets each paid 25 and 29 cents a mile. Every other fleet had its own reimbursement rate: 16 cents per kilometer; 20 cents; 22; 24; 26; 27; 28.8; 30; 31, and 32 cents per mile.

Three of the participating Canadian fleets reported they made a one time cash payment to an employee who because of transfer or promotion lost eligibility for a company car. In one fleet it was merely "a one time payment;" in another it was $1,500 less taxes; in the third it was $2,000. Several fleets indicated that value of the car was taken into consideration in the employee's new remuneration package.

Six fleets in the group said they gave the employee an opportunity to buy the car upon transfer or promotion. In four fleets the price was set at "book value." In one case it was "AMR less mileage, less 15 percent for reconditioning," and in the last instance it was based on the "Black Book" value. ■

NOTE

ONLY THE FOLLOWING PAGES OF THIS

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Cover 1, Cover 4, 15-16,

18, 20.

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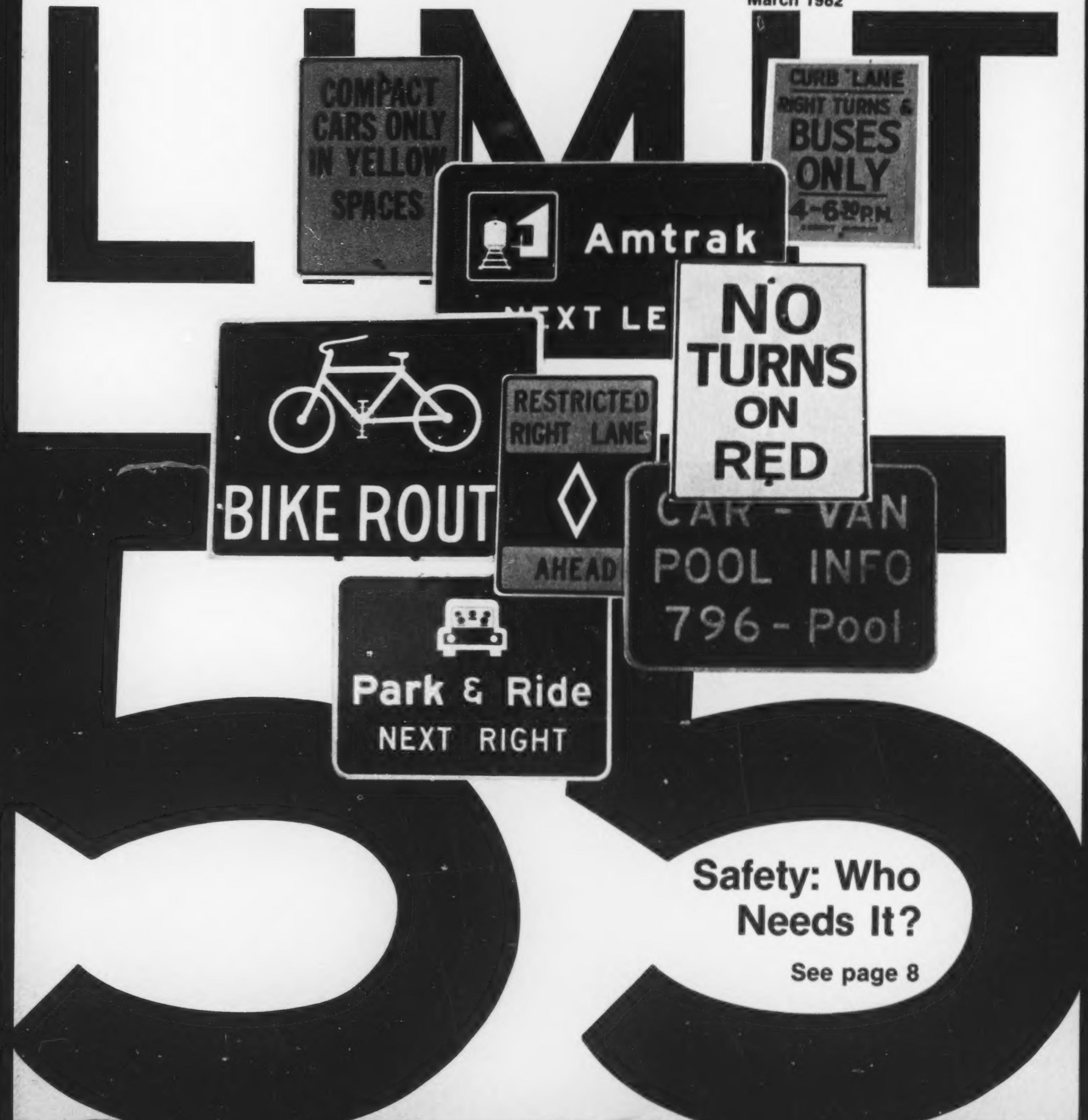
NAFA Bulletin

The Magazine for Fleet Administrators

March 1982


LIMIT
55
COMPACT CARS ONLY IN YELLOW SPACES
CURB LANE RIGHT TURNS & BUSES ONLY 4-6:30 P.M.
Amtrak NEXT LE
NO TURNS ON RED
BIKE ROUT
RESTRICTED RIGHT LANE AHEAD
CAR - VAN POOL INFO 796 - Pool
Park & Ride NEXT RIGHT

Safety: Who Needs It?

See page 8

NAFA BULLETIN MARCH 1982

- NEWS HIGHLIGHTS 3
- LETTERS 4
- INSURANCE INSTITUTE SAYS SMALL CARS CAN BE MADE SAFER 6
- SAFETY — WHO NEEDS IT? 8
- USING REAR SEAT BELTS REDUCES INJURIES 28 PERCENT 15
- SAFETY 21
- BOARD OF GOVERNORS APPROVE NEW CHAPTER 24
- MVMA's GLOSSARY 27
- 10 FOOL PROOF WAYS TO CONSERVE GASOLINE 28
- NAFA's HOTLINE 30
- SOME GOV'T FLEETS SWITCHING TO USED CARS 32
- CHAPTER NEWS 34
- WHOLESALER/BROKER DIRECTORY 35
- DIRECTORY OF AUTO AUCTIONS 36
- DIRECTORY OF FLEET CAR DEALERS 38

NAFA

NATIONAL ASSOCIATION OF FLEET ADMINISTRATORS, INC.
295 Madison Ave., New York, N.Y. 10017

Swedish Study Shows:

Using Rear Seat Belts Reduces Injuries 28%

The following article was prepared by H. Norin, A. Nilsson-Ehle, E. Saretok, from the Volvo Car Corporation, and C. Tingvall from the Swedish Road Safety Office. The study was presented at the Eighth International Technical Conference on Experimental Safety Vehicles.

In Sweden, more than 25,000 car occupants are killed or injured annually. Slightly more than a fifth of these are rear seat occupants.

When the act requiring compulsory use of front seat belts came into effect in 1975, the use of front seat belts increased extensively. Thanks to this, a large number of people have escaped serious injury.

Although seat belts are installed in the rear seats of 75% of Sweden's car population, they are used by less than 5% of rear seat occupants according to studies carried out by TSV.

Background Data

Each new Volvo car sold in Sweden is covered by a 3 year or a 5 year "warranty" — PVG, a form of built-in motor vehicle damage insurance.

In the event of a road accident, and when the Volvo vehicle is covered by this "warranty" and the repair cost exceeds approximately SKR 4,000 (Krona is worth approximately 18¢) the vehicle is inspected by a Claims Inspector from the PVG Department.

In connection with this inspection, accident data are documented on behalf of the Volvo Traffic Accident Research Department. In this manner, a data bank has been built up covering all of the more serious road accidents which took place in Sweden between 1974-76 and between 1978-79 in which a Volvo 140 or 240 was involved.

The analysis material covers a total of about 8,000 accidents. In those cases where there was a rear seat passenger — whether the passenger was injured or not — the accident has been selected for further study.

The accidents selected in this manner involve 2,265 rear seat occupants. Of these, 141 were belted 1,684 were unbelted, while in the case of 440 rear seat occupants, use of the seat belt was unknown. The latter group was then excluded from the analysis. These missing data have been checked and it was found that they had no effect on the analysis result.

Results of the Analysis

The following is the result of studies of seat belt use by rear seat occupants. The way in which seat belt use is influenced by various traffic environments is also studied.

Seat belt use by rear seat occupants in this accident material is 7.7%. This is somewhat higher than the TSV reports covering all makes of cars in Sweden.

For the outer rear positions (left and right sides), the frequency of use is 9.4%. For the middle position, it is 3.4%.

Table 1 shows that seat belt use by rear seat occupants of both sexes is relatively comparable. The table also shows that the frequency of use within the 1-14 years age group is lower than it is for the two other groups. For the outer rear seat positions there are three point seat belts, of static or inertia reel type. In the middle rear position there is a static lap belt.

The type of belt and the type of journey are two factors which have an influence on seat belt use. Therefore, a division was made between vehicles with and without rear seat belts of inertia type. In addition, a division was made between types of journey based on the road environment where the accident took place.

The frequency of use is approximately twice as high as in vehicles with static three point belts.

(Continued on page 16)

Using Rear Seat Belts

(Continued from page 15)

The table also shows that seat belt use by rear seat occupants is decidedly influenced by the type of road environment in which the accident occurred. The various road environments probably indicate differences in the type of journey, such as length of journey, etc. Marked differences can thus be observed in the frequency of seat belt use.

For example, rear seat occupants of vehicles without inertia reel belts traveling on a main, village and suburban road have a frequency of use of only 4%. Occupants of vehicles with inertia reel belts, in accidents occurring on motorway and freeway, were using their rear seat belts in approximately 28% of the cases.

Bearing in mind the higher speeds on highways and motorways it can be presumed that the accidents are more serious on these types of roads than they are in town traffic.

Since rear seat occupants show a greater tendency to wear their seat belts when travelling on motorways and main roads, a comparison between accidents with belted occupants versus unbelted occupants can be expected to show a tendency to include more serious accidents for the belted occupants (higher speeds = belted occupants).

Considering the situation, it is not probable that the estimated effects of the rear seat belts have been exaggerated.

Accident Survey Results

An investigation of the effect of belt use for rear seat occupants has been carried out by Volvo Car Corporation and the Analysis Department of the Swedish Road Safety Office. (TSV).

The report is based on approximately 2,000 relatively serious accidents in Sweden in which a Volvo 140 or 240 has been involved and in which there was at least one rear seat occupant in the Volvo Vehicle.

From the results we can see that seat belt use by rear seat occupants in this accident material is 7.7%. The seat belt use by rear seat occupants is decidedly influenced by the type of journey, and also by type of seat belt available in the car. Rear seat occupants differ from front seat occupants in being largely children. A clear difference is apparent in injury frequency between children and adults. If this difference in age grouping and injury frequency is taken into account, the analysis indicates that the injury risk is approximately the same for all seats in the car. Furthermore there is a clearly apparent difference in injury percentages for belted and unbelted occupants, both children and adults. The injury-reducing effect of seat belt use in the rear seat is about 28% for adult occupants.

Table 1.

Belt use by age, sex and position in rear seat.

Age	Outer positions		Middle positions	
	Male	Female	Male	Female
1-14	6.4%	7.6%	2.5%	2.2%
15-56	11.2%	10.4%	5.7%	5.1%
57 and over	14.3%	9.6%	—	—

Table 2.

Belt use by rear seat occupants with regard to type of belt and road environment.

	Static belt	Inertia reel belt
Motor and Freeway	15.8%	27.8%
Highway	8.0%	16.8%
Village and Suburban Roads	4.0%	7.0%

Type of Accident and Degree of Severity

To clarify the differences in accidents in which the rear seat occupants were belted or unbelted and in which the degree of severity and type of accident differ, these accident groups have been compared.

Table 3 shows that the number of accidents in both groups is approximately the same. The small variations that do exist are not expected to influence the analysis of seat belt effect.

(Vehicle Deformation Index-VDI is a method of determining vehicle deformation as a result of an accident. The figure 20 represents a 20% deformation of half the vehicle's length.)

Due to the relatively low number of cases in which rear seat occupants were wearing seat belts it has not been considered worthwhile to breakdown the accident statistics further.

For the most common type of accidents, frontal collisions, the cases can be divided into two groups: Those resulting in slight deformation of the vehicle front, and large deformation of the vehicle front.

On basis of the figures shown in **Table 3** there is no indication that accidents, in which the rear seat occupants were belted, differ in either type of severity, from those in which rear seat occupants were not belted.

Risk of Injury: Rear Seat Versus Front Seat

It is generally supposed that in case of an accident the rear seat of a car is a relatively safe place in which to travel and that use of seat belts by rear seat occupants is not very necessary.

Many people also prefer to travel in the rear seat instead of sitting in the front and being legally compelled to use the seat belt.

(Continued on page 18)

Using Rear Seat Belts

(Continued from page 16)

Abbreviated Injury Scale (AIS) is a method of describing injuries in code form. The severity of the injury can vary from 1 (slight injuries) to 6 (fatal injuries).

The front seat occupant numbers have been taken from the 1974 accident statistics, that is to say before the compulsory use of seat belts for front seat occupants came into force in January 1975. The reason is that this provides an accident group

(Continued on page 20)

Table 3.

Distribution of various types of accident for vehicles with belted and unbelted occupants.

Type of accident	Rear seat passengers	
	belted	unbelted
Frontal collision		
slight deformation		
VD1 <20	27%	29%
larger deformation		
VD1 ≥20	13%	13%
Side collision	16%	18%
Rear end collision	8%	7%
Rollover	10%	9%
Multiple accident	15%	13%
Other types	11%	11%
Total	100% 141 cases	100% 1684 cases

Table 4.

Injury frequency of unbelted occupants in front seats and in rear seats.

	No. of occupants	AIS 1-6	AIS 3-6
Drivers	1,284	35.6%	3.0%
Front seat passengers	429	40.8%	3.7%
Rear seat passengers	1,684	32.6%	2.6%

Table 5.

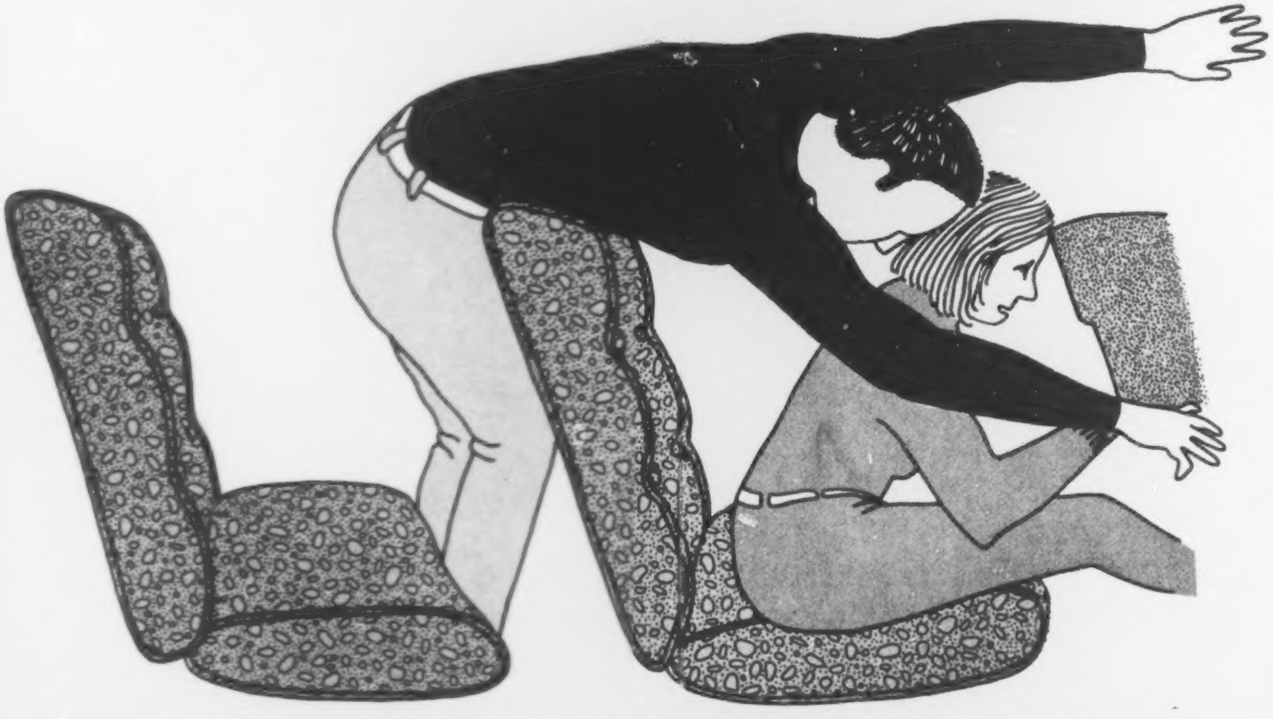
Division by age groups in front and rear seat.

Age	Driver	Front seat passenger	Rear seat passenger
1-14	—	4%	40%
15-56	87%	82%	51%
57 and over	13%	14%	9%

Table 6.

Injury frequency of unbelted rear seat occupants divided into age groups.

Age	No. of occupants	AIS 1-6	AIS 3-6
1-14	658	27.4%	2.3%
15-56	835	35.1%	2.9%
57 and over	139	47.5%	3.6%



Unbelted rear seat passengers can be thrown into the front seat and injure the driver and other front seat passengers.

Using Rear Seat Belts

(Continued from page 18)

which is more comparable with accidents in which the vehicle had rear seat occupants.

Table 4 shows that the accident frequency for rear seat passengers is lower than for front seat passengers and, in some cases, also for the driver. This would seem to confirm the opinion mentioned in the introduction that the rear seat is a safer place in which to travel than the front seat. However, the risk of injury is greatly dependent on the age of the occupant. The age spread also varies considerably between the various places in the vehicle.

Study of **Table 5** will clarify this situation. This table shows division by age of unbelted occupants.

The injury frequency for occupants between the ages of 15 and 56 is relatively stable. Therefore, occupants in this age bracket have been concentrated to one group. This group is compared with younger occupants (children) and older occupants.

Table 5 shows that rear seat occupants differ from front seat occupants in being largely children. What are the injury frequencies for occupants in these respective age groups? Let us take a closer look at rear seat occupants that have not used seat belts since this is a large group with all ages represented.

Injury Frequency

A clear difference is apparent in injury frequency between the three age groups concerning both the total injury frequency and the serious to fatal group of injuries. This difference in age grouping and injury frequency must be taken into account when appraising the risk of being injured in the different places in a car. To reduce the risk of incorrect appraisal, the child group and the oldest occupants group were excluded from the statistical input for **Table 4**. After having made this adjustment, new injury frequencies for each respective position appear as shown in **Table 6**.

Table 7 shows that the frequency of injury of drivers, front seat passengers and rear seat passengers is approximately the same in the age group 15-56 years. The slightly higher percentage of minor injuries to front seat passengers is probably because this group includes a slightly higher percentage of females.

Table 7.

Injury frequency of unbelted adults between 15-56 years of age in front and rear seats.

	No. of occupants	AIS 1-6	AIS 3-6
Drivers	1,118	35.2%	2.7%
Front seat passengers	368	40.6%	2.5%
Rear seat passengers	835	35.1%	2.9%

The analysis indicates that the risk of being injured, concerning both light injuries and serious to fatal injuries, does not lessen if an unbelted passenger moves from the front to the rear seat.

Seat Belt Effect for Rear Seat Occupants

The amount of material in the analysis permits a comparison between the number of rear seat occupants wearing seat belts and not wearing seat belts. To make this comparison worthwhile, the rear seat occupants have been divided into two groups: children and adults.

In spite of the partly limited documentation, there is a clearly apparent difference in injury percentages for belted and unbelted occupants, both children and adults. The effect of the seat belt is approximately the same in the front seat as it is in the rear seat. (1,2) On the basis of previous studies it is known that the effect is greater in more serious accidents. The material studied for rear seat occupants also indicates this fact.

The most serious injury among the belted children was an uncomplicated fracture of the right wrist (AIS 2). Serious injuries were also rare among the belted adults in the group.

The use of seat belts primarily reduces head injuries. In the case of children, the total frequency of head injuries is reduced from 17% (112 of 658) to 3% (1 of 38). Among unbelted children, head injuries are the most common type of head injury.

For adult occupants, the equivalent reduction in frequency is from 17% (164 of 974) to 10% (10 of 98) if the seat belt is used. No serious head injuries were found in either adults or children wearing seat belts. ■

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NAFA
Bulletin
The Magazine for Fleet Administrators
April 1982

SILVER ANNIVERSARY CONFERENCE

NAFA's Operating Expense Survey

Official Program
Denver
May 2-5, 1982

letters

Retired Member Commends NAFA

This is to advise you that effective April 30, 1982 I will be retiring after 21 years with this department.

Although I have not been in a position to actively participate in all of the various functions, I have enjoyed those that I was able to attend. We have, however, been able to benefit from the Automobile Fleet and NAFA Bulletin publications along with the many informative pamphlets and books received from the various manufacturers. The ability for advance information has helped a great deal in our decision-making process. Keep up the good work and know that there are those of us out here who have been served well by it.

Lt. Howard Rick
Police Department
Fridley, Minnesota

●

Alacchi Has Solution

Yesterday started as a typical fleet administrator's day. Another call from one of my drivers in Denver — same car — same problem that I've heard consistently since the car was sent there new. Where to go for an unbiased opinion of what to do to solve the problem? Then I remembered — NAFA Hotline!

The details are unimportant but upon arriving at my home last evening the phone rang and a pleasant Mr. Alacchi, apologizing for calling at my home, was the caller with the solution.

I was promoted to my present position because of my management and administrative background, certainly not my technical knowledge of automobiles. I am so grateful to have the NAFA Hotline — I think you have found a way to serve the members and fill a void that no one else has ever addressed.

My congratulations to you and to Mr. Alacchi for having the insight and creativity to offer such a needed service.

Diana L. Hullinger
Fleet Administrator
Holy Cross Shared Services

●

"Red Tag" Index For Hotline Number

I have now had two opportunities to use the NAFA Maintenance hotline. I found it so helpful that I made myself a "red tag" telephone index card to have the number at my finger tips!

On one occasion I needed information on tires, another time on shocks, especially for front wheel cars. The tire information was already incorporated into a "Maintenance News" bulletin.

Information of this kind will save NAFA members not only money but also the feeling of helplessness when talking to a mechanic from a national account store. Again, Pat, (NAFA's Maintenance Committee chairman), and Joe, many thanks for the Hotline.

O.M. Engel
Fleet Manager
Surgikos

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in this issue

APRIL 1982

Letters 3

Official Program 5,6,7,8
Agenda, social program, list of speakers and industry workshop chairmen for NAFA's 25th Annual Conference.

News Highlights 9

Passenger Car Fuel Economy ... 10
Automakers surpass Federal fuel economy standards and are confident that this trend will continue into the mid-eighties and beyond.

NAFA's Operating Expense Survey 12
The cost of keeping a fleet car on the road rose more than two cents a mile in 1981, according to the survey.

Conference Speakers 18
A short biography on each speaker outlining their professional backgrounds.

Fleet Safety Program 22
State of South Carolina gives recognition to state employees who have operated state-owned vehicles safely.

Wharton Certification 24
Wharton Professor describes Certification Program in an exclusive interview with NAFA Bulletin editor.

Hotline 30
Alacchi warns against mixing diesel fuels and additives.

Preserving America's Highways . 32
America's highways will continue to deteriorate unless current expenditures are altered.

England's Fleet Transport Industry 34
Companies in England search for ways of surviving in the face of the worst sustained slump in demand for trade and transport services.

Wholesaler/Broker Directory 39

Directory of Auto Auctions 40

Directory of Fleet Car Dealers .. 42

No Fret From Automakers To Meet 27.5 M.P.G. by '85

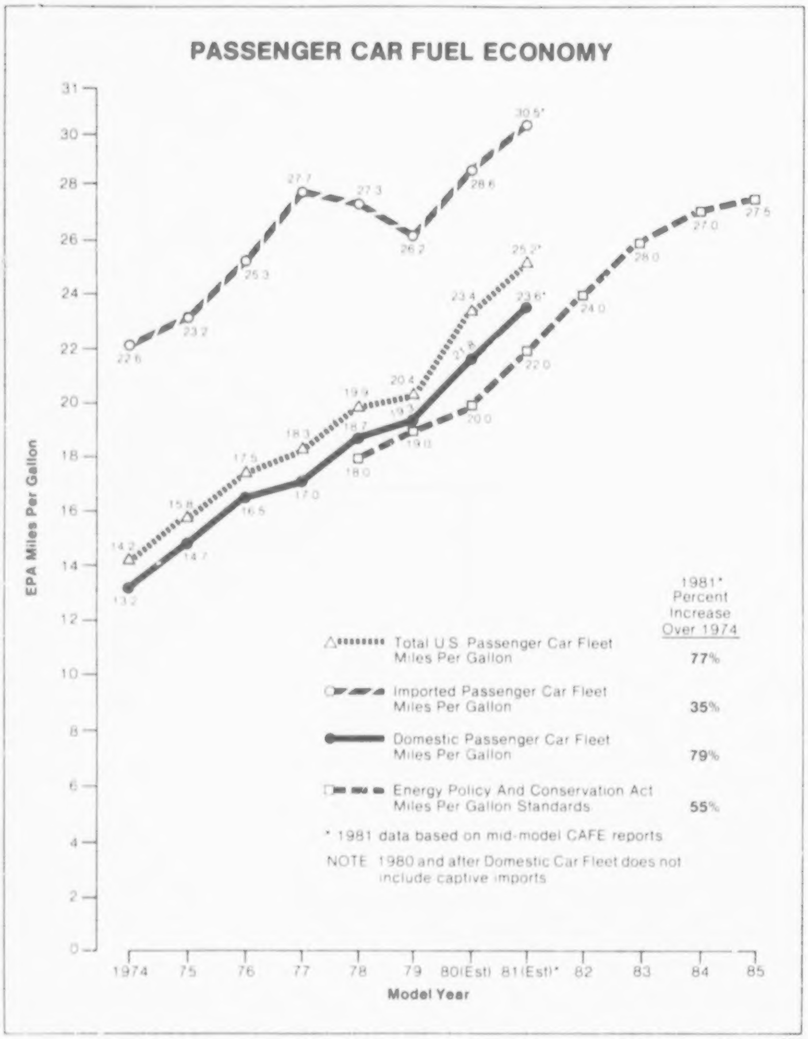
The future looks bright for American automakers, according to a recent report issued by the Motor Vehicle Manufacturers Association. Domestic automobiles are more than comfortably surpassing Federal fuel economy standards, and manufacturers are confident that this trend will continue into the mid-eighties and beyond. According to MVMA President V.J. Aducci, 1982 domestic cars are already topping the current federal standard of 24 miles per gallon, while they are expected to achieve an average of 31 miles per gallon by 1985.

Progress Is Encouraging

As recently as 1974, the domestic economy fleet was achieving only a 13.2 miles per gallon rate. With the current 1982 rate exceeding 24 m.p.g., progress is encouraging. As long as the marketplace continues to exert pressure in demanding more fuel efficient cars, the automobile manufacturers are expected to insure better fuel economy standards for the future.

Of the many fuel economizing techniques available to automakers, the more promising strategies utilize a combination of downsizing and weight reduction through use of lighter materials, aero-dynamic design principles, and employment of the lighter front-wheel drive models. In addition, diesel and four-cylinder engines are slated for greater popularity and computer technology will play a role in maximizing fuel efficiency with under-the-hood computers, which monitor fuel consumption and aid in emission reduction.

Car manufacturers are approaching the future with the spirit of innovation and commitment necessary to make the domestic car as efficient, safe and economical as modern technology will allow, according to V.J. Aducci, president of the MVMA.



January 1982

Source: Motor Vehicle Manufacturers Association

Motor Fuel Taxes Drop

(Continued from page 9)

tions. The remaining six states which share this system of taxation include Nebraska and Rhode Island, remaining at previous tax levels; Ohio and New Mexico, where rates do not change until July; Pennsylvania, using a combination of per-gallon tax plus a percentage tax that changes at each wholesale transaction; and Indiana, where the tax went up from 10.5 cents to 11.1.

Cents-Per-Gallon Used

The remaining states use a tax system whereby a flat cents-per-gallon fee is charged, irrespective of the going price on motor fuel. This allows state tax revenues to remain stable in the face of gasoline prices that might be declining at the pumps. The Highway Users Federation opposes an index, feeling that a reliable tax income can't be sustained in a climate of declining prices. On the other hand, the more widely used flat cents-per-gallon system of taxation is more certain to guarantee the sufficient revenues that are necessary for highway transportation and safety improvements.

NAFA's Operating Expense Survey Shows:

Car Prices and Push Expenses

The cost of keeping a fleet car on the road rose more than two cents a mile in 1981, as compared to 1980, according to NAFA's annual operating expense survey.

NAFA Exclusive

The major increase resulted from higher new car prices and interest charges — averaging $50 a month more in 1981 than in 1980 — while actual operating expenses remained fairly steady at less than 10 cents a mile.

A total of 72 fleets operating more than 56,000 passenger cars participated in the Association's annual survey of fleet operating expenses.

The results of the survey are based on NAFA's Recommended Classification of Automobile Expenses. Under this accounting system, fleet costs are divided into three major categories.

Operating Expenses: consist of all expenses directly related to running a vehicle — fuel, oil, tires and tire repair, and normal maintenance and repair. These are computed in pennies per mile per car.

Car Size Categories

The NAFA operating expense report is divided into four car size categories:

Sub-Compact Cars: Wheelbase of under 100 inches and a curb weight of less than 2,300 pounds.

Compact or Small Cars: Wheelbase between 100 and 106 inches and a curb weight of between 2,300 and 2,799 pounds.

Mid-Size or Intermediate Cars: Wheelbase between 106 and 114 inches; curb weight between 2,800 and 3,399 pounds.

Large Cars: Wheelbase of more than 114 inches and a curb weight of more than 3,400 pounds.

Incidental Expenses: consist of license and taxes, accident repairs less recoveries, washing, parking, tolls, and miscellaneous expenses. These costs are computed on a dollar per car per month basis.

Standing Expenses: These consist of investment costs, depreciation, and insurance. These expenses are computed on a dollar per car per month basis.

Subtracted from the incidental and standing expenses are chargebacks or credits which are generally for personal use and optional equipment acquired by the company car operator.

In addition to the four basic car size categories used in NAFA surveys, the 1981 operating expense survey requested additional data on the cost of operating small, front-wheel drive cars and diesel engine vehicles.

Sub-Compact Cars

The 1981 survey is the first in which sufficient data was acquired to break out the operating expenses for sub-compact cars. These vehicles are driven the fewest number of miles per month — 1,525 — and have the lowest cost per month —

Sub-Compact

	1981
Average miles per month	1,525
Fuel	.0589
Oil	.0009
Tires & Repair	.0063
Repair & Maintenance	.0157
Total Operating Expense	.0818
Average price per gallon of fuel	$1.35
Average miles per gallon	22.9

Interest Rates Up 2 Cents

.0818 cents per mile. Based on an average price of gasoline at $1.35 per gallon, these cars averaged 22.9 miles per gallon in 1981.

The survey response didn't permit an accurate breakdown of incidental and standing expenses for this group of vehicles.

Small Cars

Actual operating expenses for small or compact cars declined in 1981 as compared to 1980. According to the 1980 survey the operating expense was .0923 cents per mile, while in 1981 it was .0911 cents per mile. While fuel costs increased slightly in 1981 as a result of higher gasoline prices, the per mile cost of tires and repair maintenance actually declined on a per mile basis.

> ***"The 1981 survey is the first in which sufficient data was acquired to break out the operating expenses for front-wheel drive cars and diesel engine vehicles."***

In 1980 the small cars averaged 17.4 miles per gallon, while in 1981 this jumped significantly to 18.6 miles per gallon. Cost of fuel was calculated at $1.21 per gallon for 1980 and $1.35 per gallon for 1981.

Unfortunately, responses to the survey didn't provide enough data to compute the incidental and standing expenses for this group of vehicles.

Mid-Size Cars

Operating expenses for mid-size or intermediate cars increased a half cent per mile in 1981 as compared to 1980, according to the NAFA survey. In

(Continued on page 14)

Operating Expense Comparison Composite Fleets 1980 vs. 1981

	1980	1981
Average Miles per month	1,897	1,822
OPERATING EXPENSES		
(cents cost per car per mile)		
Fuel	.0715	.0745
Oil	.0012	.0012
Tires & Repair	.0066	.0059
Repair & Maintenance	.0132	.0142
Total Operating Expense	.0925	.0958
INCIDENTAL EXPENSES		
(dollar cost per car per month)		
License & Taxes	$ 9.07	$ 6.23
Accident Repairs — Recovery	8.90	8.65
Washing	3.24	5.04
Parking and Tolls	11.50	16.48
Miscellaneous	1.23	3.29
Total Incidental Expenses	$33.94	$39.69
STANDING EXPENSES		
(dollar cost per car per month)		
Leasing service charge or interest	$ 51.46	$ 74.86
Depreciation Reserve	120.95	154.89
Depreciation Adjustment	-16.91	-17.56
Selling Expenses	—	1.35
Insurance	19.16	21.27
Total Standing Expenses	$174.66	$234.81
CREDITS		
(dollar return per car per month)		
Personal Use Credit	$23.64	$41.48
Extra Equipment Credit	1.89	2.15
Total Credits	$25.53	$43.63
NET EXPENSES		
(Incidental Expenses plus Standing Expenses less Credits)	$183.07	$230.87

Operating Expense Comparisons 1980 vs. 1981

Small Cars

	1980	1981
Average miles per month	1,630	1,794
Fuel	.0695	.0725
Oil	.0010	.0011
Tires & Repair	.0074	.0052
Repair & Maintenance	.0144	.0123
Total Operating Expense	.0923	.0911
Average price per gallon of fuel	$1.21	$1.35
Average miles per gallon	17.4	18.6

Mid-Size Cars

	1980	1981
Average miles per month	1,929	1,799
Fuel	.0725	.0781
Oil	.0011	.0010
Tires & Repair	.0066	.0064
Repair & Maintenance	.0120	.0118
Total Operating Expense	.0922	.0973
Average price per gallon of fuel	$1.21	$1.35
Average miles per gallon	16.7	17.3

Large Cars

	1980	1981
Average miles per month	1,773	1,611
Fuel	.0859	.0977
Oil	.0012	.0014
Tires & Repair	.0065	.0070
Repair & Maintenance	.0175	.0152
Total Operating Expense	.1111	.1213
Average price per gallon of fuel	$1.21	$1.35
Average miles per gallon	14	13.8

Operating Expense Survey

(Continued from page 12)

1980, this group of vehicles cost .0922 cents per mile to operate; in 1981 it was .0973 cents per mile.

The entire increase was in the cost of fuel which rose from .0725 cents per mile to .0781 cents per mile in 1981. The cost of tires and tire repair and normal repair and maintenance remained practically level in 1981.

Average miles per gallon in 1981 was 17.3 as compared to 16.7 in 1980.

There was not sufficient data to calculate the standing and incidental expenses for this group.

Large Cars

The cost of operating large cars increased slightly more than one cent a mile in 1981, as compared with 1980 — going from .1111 to .1213. Almost all of this increase is reflected in the cost of fuel which rose from .0859 in 1980 to .0977 in 1981.

Average miles per gallon of the large cars showed a slight decrease in 1981 — 13.8 — as compared to 14 mpg in 1980. Statistically, this probably is insignificant, except when compared to the miles per gallon usage of the other categories.

Composite Fleet

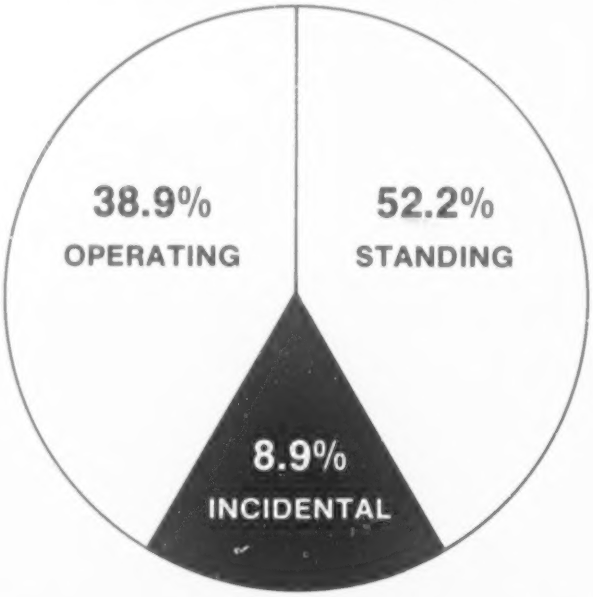
The largest segment of the survey response fell into the composite fleet group which consists of those fleets that report total expenses but do not break out the expenses by car size groupings. The actual composition of the composite fleet group is three percent sub-compacts; 43 percent compacts; 51 percent mid-size, and three percent large cars.

> ***"The major increase resulted from higher new car prices and interest charges — averaging $50 a month more in 1981 than in 1980 — while actual operating expenses remained fairly steady at less than 10 cents a mile."***

Operating expenses for this group rose from .0925 cents per mile in 1980 to .0958 in 1981. The bulk of the increase resulted from the rise in the

(Continued on page 16)

COMPOSITE FLEET BREAKDOWN OF EXPENSES



Does Not Reflect Personal Use or Equipment Credits

Operating Expense Survey

(Continued from page 14)

cost of gasoline — from .0715 per gallon in 1980 to .0745 in 1981. According to the 1980 survey, the average mpg for the composite fleet was 16.9; in 1981 it was 17.8.

Incidental expenses rose from $33.94 per car per month to $39.69 per month. The single largest factor in this increase was in parking and toll charges.

Standing expenses jumped dramatically in 1981 for the composite fleet group. They rose from $174.66 per car per month in 1980 to $234.81 in 1981. Both service charges and interest and depreciation reserves showed sharp increases during the year, while insurance showed a smaller increase.

A positive factor in holding down total expenses in the group came from a significant increase in credits or dollar return to the company, particularly in personal use chargebacks. This credit rose from an average of $23.64 per car per month to $41.48 per car per month.

Total expenses for cars in the composite group — driven 1,897 miles per month — in 1980 were $358.54, or 18.9 cents per mile. According to the 1981 survey, the total expenses for cars driven 1,822 miles per month were $405.42, or 22.2 cents per mile.

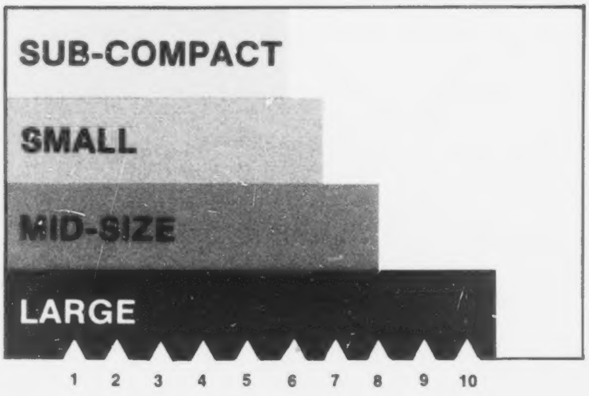
Small Front-Wheel Drive Cars

	1981
Average miles per month	1,812
Fuel	.0693
Oil	.0010
Tires & Repair	.0050
Repair & Maintenance	.0111
Total Operating Expense	.0864
Average price per gallon of fuel	$1.35
Average miles per gallon	19.8

Diesel Engine Cars

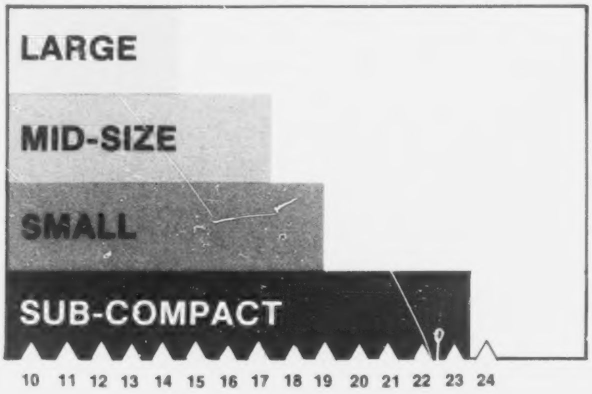
	1981
Average miles per month	2,895
Fuel	.0484
Oil	.0021
Tires & Repair	.0045
Repair & Maintenance	.0080
Total Operating Expense	.0630
Average price per gallon of fuel	$1.25
Average miles per gallon	25.7

COST COMPARISONS



COST OF FUEL
(Cents Per Mile)

M.P.G. COMPARISONS



MILES PER GALLON (1981)
(Fuel at $1.35 per gallon)

Front-Wheel Drive

Operating expenses for front-wheel drive cars, broken out for the first time in the 1981 survey, amounted to .0864 cents per mile for cars driven an average of 1,812 miles per month. According to the report, these cars averaged 19.8 miles per gallon (calculated with gasoline costing $1.35 a gallon). Total fuel costs for these vehicles was slightly less than seven cents a mile.

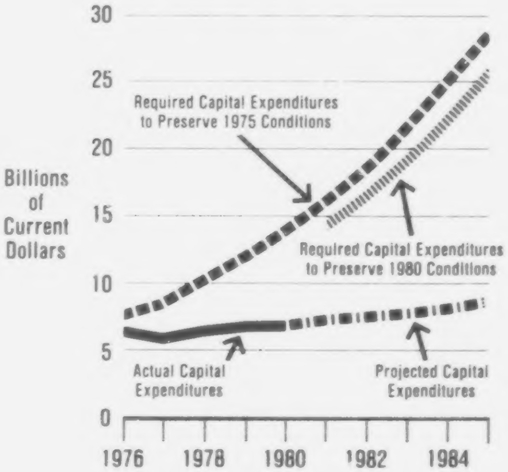
Diesel Engine Cars

The diesel-powered cars reported on the survey were driven 2,895 miles per month, by far the most of any group. Total operating expenses for the diesel cars was .0630 cents per mile, using an average price of $1.25 per gallon fuel. These cars reported an average of 25.7 miles per gallon. ■

Preserving America's Highways:

Can It Be Done?

This article is based on a study conducted by the General Motors Research Laboratories as a portion of a recently completed U.S. Roads Needs Project. The goal of the project was to document the current status of the nation's highway systems and estimate the future dollar requirements to preserve the nation's investment in its roads. The research was conducted by a team that included Dr. Bruce A. Phillips, Dr. Herbert J. Bauer, Dr. Robert D. Blanchard, and Dr. Gregory C. Nicolaidis.



Capital expenditures needed to preserve pavement conditions on the existing US highway systems greatly exceed actual and projected expenditures through 1985.

The road to maintaining the major United States highway systems is strewn with financial potholes and will continue to deteriorate unless current expenditures are altered. According to a report published by General Motors Research Laboratories, the conditions on interstate, arterial, and collector systems have declined since 1975 because actual highway expenditures have lagged behind needed levels of spending.

(The Interstate Highway System consists of 39,000 miles, arterial highways represent more than 300,000 miles and serve rural traffic of significance and urban travel on the highest volume traffic corridors; the 800,000 miles of collector highways serve travel of a more localized nature than the arterial highways.)

In 1981, capital improvements costing $40.1 billion (1981 dollars) would have been needed to restore all the highway systems to their 1975 conditions. On the other hand, $14.5 billion would have been needed just to preserve the system's existing 1980 condition. These estimates of highway needs far exceed the 1981 capital expenditures for improvements of $7.5 billion. If current expenditure trends are continued until 1985, according to GMR, it will then cost $119 billion to restore the systems to their 1975 levels.

General Motors' analysis revealed that approximately 26,000 miles of U.S. highways should have been resurfaced or reconstructed each year since 1975 to have kept pace with deterioration. The annual cost of preserving this mileage has increased rapidly, from $7.9 billion in 1976 to $14.1 billion in 1980 dollars.

Actual preservation expenditures on the Interstates, arterials, and collectors have not met these needed levels. The estimated $6.6 billion spent in 1976 was sufficient to finance 84 percent of the needed work. However, 1980 expenditures of $7.1 billion represented just over half of the level required. Expected expenditures of $8.1 billion in 1985 would represent just 30 percent of the funds

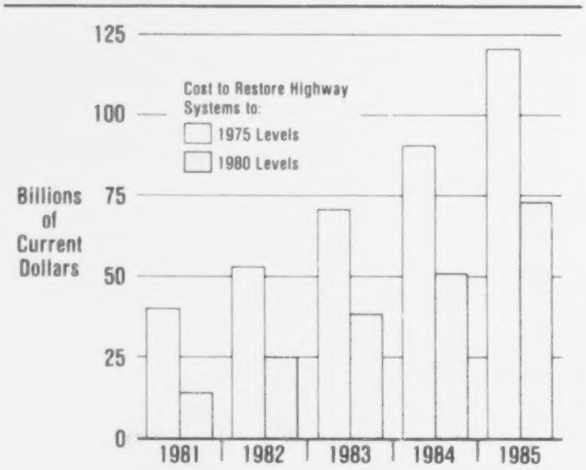
References: ***Dollar Needs to Preserve and Restore U.S. Roads*** **by Bruce A. Phillips, GM Research Publication GMR 3513.**
The Impact of Inflation Upon Highway Maintenance and Construction Costs **by Bruce A. Phillips, GM Research Publication GMR-3231.**

Copies of these publications may be obtained from the Technical Information Department, General Motors Research Laboratories, Warren, Michigan 48090.

needed to improve 26,000 miles of highways in that year.

In 1975 approximately 1,500 miles of the Interstate system (four percent of the entire system) were in poor condition and required resurfacing or reconstruction. If current expenditure trends continue, as many as 5,300 miles may be in poor condition by 1985. On the arterials, the portion in poor condition has increased from seven to 10 percent. This translates into a 9,000 mile increase in the number of arterials requiring extensive repair.

> ***"The road to maintaining the major United States highway systems is strewn with financial potholes and will continue to deteriorate unless current expenditures are altered."***



If projected resurfacing and reconstruction expenditures are not increased, it will cost almost $120 billion by 1985 to restore the Interstate, arterial, and collector highway systems to their 1975 conditions and $74 billion to restore them to their 1980 conditions.

The report concludes with the statement, "No one argues with the fact that expenditure trends must be altered to save U.S. roads, not so clear-cut though, is how best to perform the alterations. Possible public policy options include increasing the revenue available for highway improvement, readjusting the distribution of funds between improvement and new construction, changing the maintenance and traffic characteristics to reduce the rate of pavement deterioration, and attempting to slow the rate of inflation. What we (GMR) do suggest is that prompt action be taken to preserve our nation's investment in its major highway systems." ■

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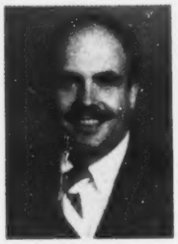
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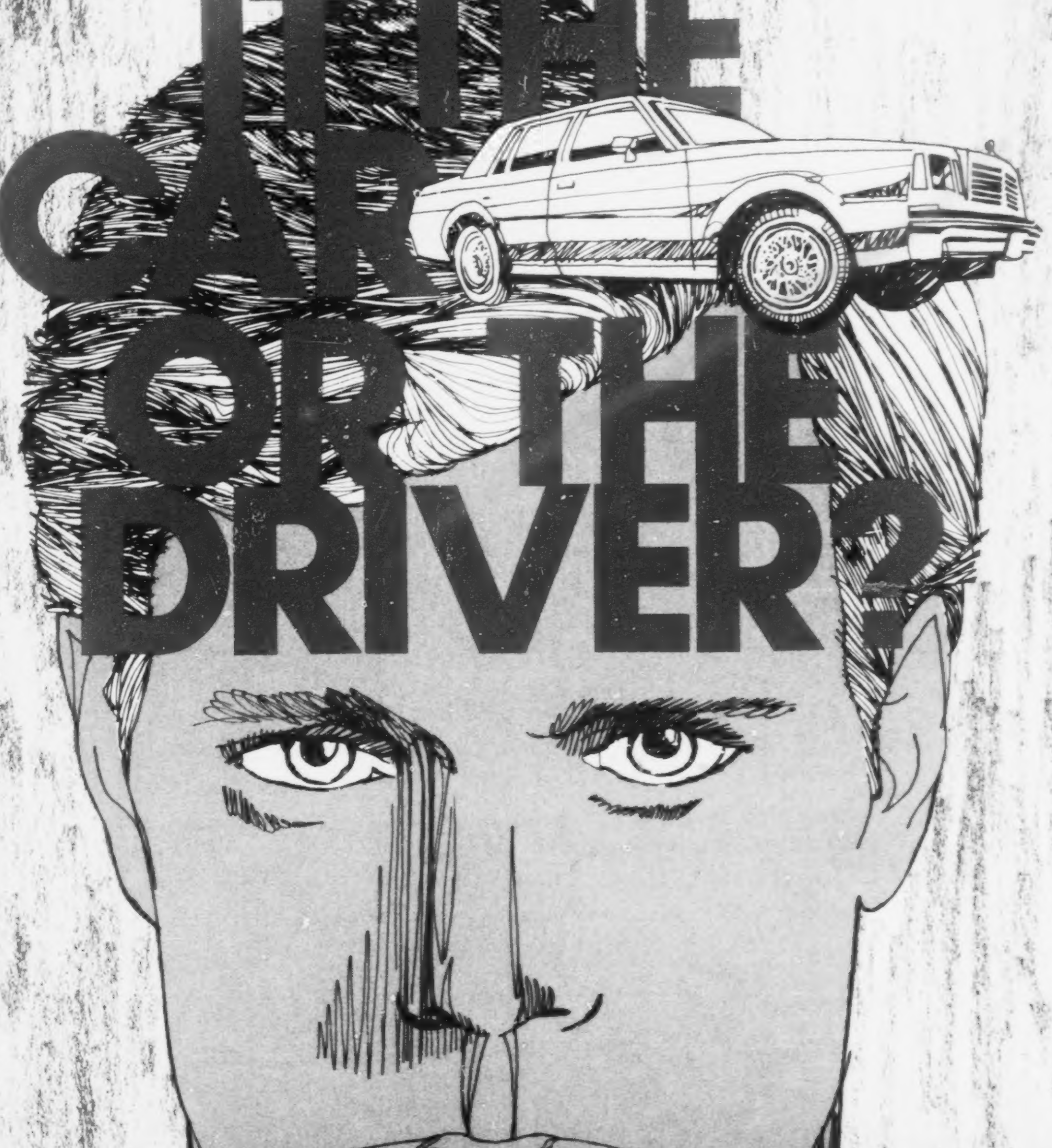
NAFA Bulletin

The Magazine for Fleet Administrators

May 1982

IS IT THE CAR OR THE DRIVER?



news highlights

Will Arco's Dropping of Credit Cards Spur Other Oil Firms to Follow?

The Atlantic Richfield Oil Company recently announced the discontinuation of credit cards in consumer transactions. According to an article in *The Wall Street Journal*, this action could affect credit policies at other major oil companies. If this does occur, it is bound to produce a variety of difficulties for the fleet administrator.

Arco's decision to phase out credit card services is expected to save the company approximately 73 million dollars a year — a savings which will be passed on to gasoline distributors through reduced prices. Arco hopes that this will make costs at the pumps decline as much as 3 cents per gallon, thereby permitting them to compete more effectively in the current price-competitive market. According to James F. Morrison, president of Arco's petroleum products division, the reduced gasoline prices should draw enough customers to compensate for market losses incurred by the abolition of credit.

Companies Honor Card

Following at the heels of Arco's announcement were offers extended by major oil companies to temporarily honor Arco credit cards. In the hopes of absorbing any customers Arco may lose, Gulf Oil Company will honor Arco cards providing the card holder fills out a Gulf card application. Sun Company will attempt to "buy" Arco card holders by offering up to $2.50 for any Arco customer willing to switch to Sunoco, and Texaco will extend special speedy credit card application procedures to ex-Arco customers.

Move Inspires Others

The central issue now is how Arco's action will affect the credit policy at the other oil companies. There are still certain industry analysts that maintain that Arco's decision may eventually inspire other companies to act similarly. It is considered prudent by some to get out from under the burden of mounting credit costs in today's tense economic atmosphere. Warren Shimmerlick, an oil industry analyst with Merrill Lynch claims that "In the environment of high interest rates, it probably makes sense for companies to get out of the credit business."

In an attempt to gauge fleet managers' reactions to Arco's decision, *NAFA Bulletin* compiled a random sampling of views from NAFA members and affiliates on the east and west coast. Opinion is divided, with some feeling that the chances are remote that other oil companies will follow Arco's lead, and others believing it could signal the beginning of the end of gasoline credit cards. This being the case, the time is ripe for fleet managers to confront the problems which could ensue from a cash-and-carry climate.

(Continued on page 4)

in this issue

MAY 1982

News Highlights 3

Is It the Car or the Driver? 6
PH&H Editor Bruce Innes supports the theory that certain cars with young drivers are inherently more likely to crash and kill than other cars.

Enforce a Firm Seat Belt Policy 12
The single best safety action a manager can take is enactment and enforcement of a firm policy requiring belt use at all times in a company car, says Dr. B.J. Campbell of the Highway Safety Research Center.

How Fleet Managers Keep Costs Down 14
Why the popularity of leasing? NAFA Members and Affiliates located in Canada discuss the pros and cons of leasing.

Revising The Clean Air Act 18
The Congress is now debating amendments to the Clean Air Act, and proposal H.R. 5252 is presently under discussion.

Hotline 24
Alacchi answers your questions on maintenance.

Alacchi on Tires 26
Alacchi discusses the subject of tires and their problems.

How are Fours Holding Up? 27
Four-cylinder vehicles are reported as durable as cars with larger engines, according to Runzheimer Reports.

New UAW Contracts 28
The UAW contract negotiations resulted in new contracts which promise to strengthen job security for the United Auto Workers.

Directory of Auto Auctions 30

Wholesaler/Broker Directory 32

Directory of Fleet Car Dealers .. 33

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Revising The Clean Air Act:

Major Provisions of Proposal H.R. 5252; What Effects Will It Have On You?

The Congress is now debating amendments to the Clean Air Act. The entire issue is very controversial and deserves careful consideration. At the present time the major proposal under discussion is H.R. 5252, a comprehensive new bill initially cosponsored by six members of the House of Representatives. They are Thomas Luken (Democrat, Ohio); Edward R. Madigan (Republican, Illinois); Bob Traxler (Democrat, Michigan); Elwood Hillis (Republican, Indiana); John Dingell (Democrat, Michigan), and James T. Broyhill (Republican, North Carolina).

The material in this article explaining the provisions in H.R. 5252 is based primarily on a publication prepared by the Motor Vehicle Manufacturers Association of the United States, Inc.

The Clean Air Act views man-made pollution in two main categories — emissions from fixed sources, such as factories or power plants, and emissions from mobile sources such as motor vehicles.

To achieve its goals, the Act authorized National Ambient Air Quality Standards, (usually referred to as NAAQS) and emission standards for specified sources and pollutants. The standards establish air quality levels that should be maintained to assure protection of the public's health and welfare. Emission standards establish the control levels for various sources to achieve these NAAQS.

According to the Environmental Protection Agency, highway vehicles in 1979 accounted for 12 percent of the total suspended particulates; two percent of sulfur oxides, 30 percent of the nitrogen oxides, and 72 percent of the carbon monoxide in the air as a national average.

The National Commission on Air Quality, created by Congress to evaluate Federal air pollution controls, in March 1981 reported:

"As a result of the Clean Air Act, total emissions from all classes of motor vehicles are reduced significantly… Motor vehicle controls under the Act have contributed to significant improvements in air quality."

According to the Motor Vehicle Manufacturers Association, H.R. 5252 proposes no changes in the standards for hydrocarbons, which are controlled to prevent smog. It would not alter the authority for California, with its special air problems, to set its own standards.

Federal automobile exhaust emission standards began in model year 1968 with new car control for hydrocarbons (HC) and carbon monoxide (CO). Oxides of nitrogen (NOx) control began in the 1973 model year.

Since these first standards were introduced, according to MVMA, manufacturers have made dramatic progress in responding to clean air objectives. By 1980, emissions of hydrocarbons had been reduced by 96 percent, carbon monoxide by 92 percent, and oxides of nitrogen by 51 percent. The standards for 1981 required a 96 percent reduction in both hydrocarbons and carbon monoxide and a 76 percent reduction in oxides of nitrogen. These are the ultimate levels of the current law now in effect.

MVMA declares, "These reductions have been achieved in a series of steps over the past decade in which manufacturers have been confronted with unnecessarily complicated engineering problems involved with these significantly different test procedures and six different sets of progressively more stringent standards."

According to the U.S. Bureau of Labor Standards, the cost of meeting the 1968 standards averaged about $16 per car. The cost of moving from the 1979 to 1980 standards was about $118. The cost of meeting 1981 standards averaged an additional $400 per car.

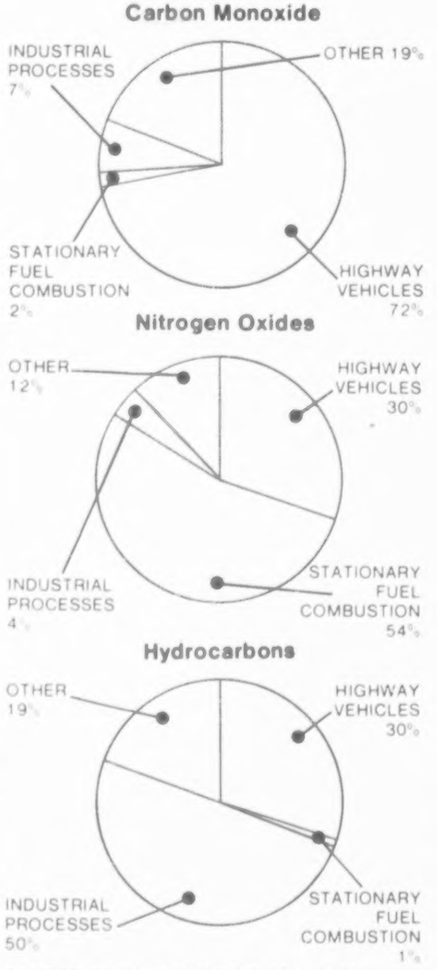
General Motors has estimated that 1981 auto standards, compared to 1980 standards, added $480 to the cost of 1981 GM cars.

CARBON MONOXIDE - A by-product of incomplete fuel combustion, carbon monoxide is a colorless, tasteless and odorless substance that displaces oxygen in the body. Especially at high concentrations in confined areas, it can be injurious to health. A National Ambient Air Quality Standard and a vehicle emission standard are set for carbon monoxide.

OXIDES OF NITROGEN - Vehicle emission standards are set for NOx to meet the National Ambient Air Quality Standard for nitrogen dioxide. Vehicle NOx emissions are a significant, but not major, contributor to the creation of nitrogen dioxide. NOx emissions are also ingredients in "smog" formation, but their role appears ambiguous. At times they appear to promote, while at other times they seem to inhibit, "smog" in urban areas.

HYDROCARBONS - Hydrocarbons are not generally considered an air quality problem as they leave the vehicle. Some hydrocarbons react in the atmosphere to promote the formation of photochemical "smog". Ozone concentration is generally used as the measure of the extent of the photochemical reaction. Thus, hydrocarbon emission standards have been set to meet the National Ambient Air Quality Standard for ozone.

SOURCES OF AIR POLLUTANTS NATIONAL EMISSIONS ESTIMATES 1979



SOURCE: Environmental Protection Agency, March 1981

MVMA has stated, "Meeting that last increment of control, moving from 92 percent to 96 percent reduction of carbon monoxide and 51 percent to 76 percent reduction of oxides of nitrogen, costs the consumer approximately 25 to 30 times more than the first major reduction — with little or no discernable air quality benefit from this last increment."

H.R. 5252 proposes retention of the 1980 standard, rather than the stricter 1981 standard. Manufacturers have estimated potential consumer savings ranging from $80 to $360 per car, depending upon the type of control technology used and the speed with which revisions to the law can be enacted.

In addition to the cash savings, the manufacturers have estimated that the retention of the 1980 standards would allow them to improve fuel efficiency up to another mile per gallon (in the range of two to five percent).

The major provisions of H.R. 5252 and the changes proposed in the Clean Air Act are:

Automobile Carbon-Monoxide Standard

The Clean Air Act establishes a carbon-monoxide standard of 3.4 grams per mile (g/m) for 1981 and later automobiles with provisions for manufacturers to request a waiver of up to 7.0 for certain 1981 and 1982 models. H.R. 5252 would re-establish the 1980 automobile standard of 7.0 g/m for 1982 through 1986 models with authority for the EPA administrator to revise the standard in subsequent model years, consistent with air quality needs.

In arguing for the change, MVMA declares "CO emissions have been sharply reduced and substantial air quality programs are being achieved. CO levels measured at 223 urban sites declined 36 percent between 1972 and 1979, according to EPA — and this occurred with the 15 g/m standard in effect only a few years.

"The 7.0 emission standard is a 92 percent reduction from pre-controlled levels. The replacement of older, less controlled cars with new models meeting the 1980 standard will make more stringent requirements unnecessary.

"The National Academy of Sciences, the National Commission on Air Quality and EPA estimate that the difference in the impact on air quality between the 3.4 and 7.0 standards for CO is negligible.

(Continued on page 22)

Clean Air Act

(Continued from page 19)

"A National Academy of Sciences study estimates that keeping the 7.0 g/m CO standard would reduce manufacturing costs by $30 to $60 per vehicle. Improved fuel economy would result because less complex catalyst systems could be used without any significant increase in CO emissions."

Automobile Oxides of Nitrogen Standard

NOx emissions are controlled primarily to achieve the National Ambient Air Quality Standard for nitrogen dioxide. The Clean Air Act established a NOx standard of 1.0 g/m for 1981 and later passenger vehicles. H.R. 5252 would reestablish the 1980 NOx standard of 2.0 g/m for model years 1982 through 1986, with authority for the EPA administrator to revise the standard after 1986.

In urging the change, MVMA says, "Outside of California, which sets its own vehicle standards, EPA has designated as non-attainment for NOx only two (of the 3,215) counties in the country — Denver and Chicago.

> ***"...H.R. 5252 proposes no changes in the standards for hydrocarbons, which are controlled to prevent smog. It would not alter the authority for California, with its special air problems, to set its own standards."***

"According to EPA estimates, total passenger car NOx emissions have decreased 13 percent between 1973 (the year that standards began) and 1979. The largest reduction occurred in 1979 as new cars meeting the 2.0 g/m standard (which started in 1977) began to have a significant impact on the total fleet as these vehicles replaced older units."

High Altitude Standards

Federal vehicle emission standards are set for sea level. EPA has set separate standards for 1982-1983 models sold in the 192 counties that are 4,000 feet or more above sea level. All of these counties are located in 11 Western states.

The standards require that emissions from new automobiles and light trucks sold in the high altitude areas be reduced by the same percentage as those at sea level. (These are the so-called proportional standards.)

However, beginning in model year 1984, all Federally certified cars must meet the same numerical standards whether sold at sea level or high altitude. H.R. 5252 would continue the present high altitude requirement for 1984 because it means that all of the new car fleet must be equipped to meet requirements designed to correct a situation occurring in areas involving only three to four percent of the vehicle population.

Compliance with such requirements might prevent some of the more fuel-efficient models, which cannot comply at high altitudes, from being available anywhere and may result in a substantial fuel penalty.

Heavy-Duty Truck Requirements

The Clean Air Act requires that in the next few years truck and bus emissions for HC and CO must be reduced by 90 percent while NOx must be reduced by 75 percent.

H.R. 5252 preserves the current standards for heavy-duty trucks but removes the requirement for specific fixed percentage reductions and permits EPA to adopt standards which provide for reasonable levels of control in terms of expected health effects, air quality, technological feasibility, costs and fuel economy.

The proposed legislation further provides that when standards for trucks are established they shall remain in effect for at least four years unless relaxed. Standards for NOx and particulate matter must be set simultaneously to allow for consideration of significant trade-offs involved in the control of these two pollutants for trucks. H.R. 5252 also allows the National Academy of Sciences to review the technical feasibility of any new proposed standard and requires such a review for any proposed standard for particulate matter.

The trucking industry favors the change because the current law is based on the assumption that heavy-duty trucks should be subject to the same percentage reduction as cars. The law doesn't reflect the fact that heavy-duty vehicles account for less than five percent of all motor vehicles on the road.

A recent report by the National Academy of Sciences, according to these sources, found that a 75 percent reduction in NOx was not feasible for heavy-duty diesel engines and there were significant fuel economy and environmental trade-offs involved in heavy-duty NOx controls.

The industry claims that a 90 percent reduction in HC and CO by heavy trucks would require costly catalyst technology (about $900 per truck) and, in fact, there are no catalytic converters currently developed that can survive the duty cycle of truck operations at present.

Criteria for Setting All Standards

The Clean Air Act has been interpreted to require that vehicle emission standards be established solely on the basis of ability to comply. H.R. 5252 requires that in setting more stringent standards EPA must consider relevant health effects information and studies dealing with the attainment of the applicable National Ambient Air Quality Standard. EPA will then set standards that are achievable through use of technology that has been demonstrated to be available for the model year to which the standard applies.

H.R. 5252 also provides that EPA is to give appropriate consideration to such factors as costs of control technology, the applicability of technology to gasoline or diesel vehicles or engines, the impact of proposed standards on fuel economy, and the affect on the level of other pollutants.

Emission Control Warranties

The current Clean Air Act establishes a 5-year/50,000-mile production warranty and a performance warranty of varying duration depending on the parts covered. H.R. 5252 would establish identical durations of 2-year/24,000-mile limits for both warranties.

This proposal has been prompted by concerns about the adverse affect the current law has on aftermarket parts, independent service businesses, and consumers of the extended warranties.

As the new bill is written it would not affect a manufacturers initial 5-year/50,000 mile-emissions system durability certification requirement or the EPA administrator's recall authority which extends for five years or 50,000 miles.

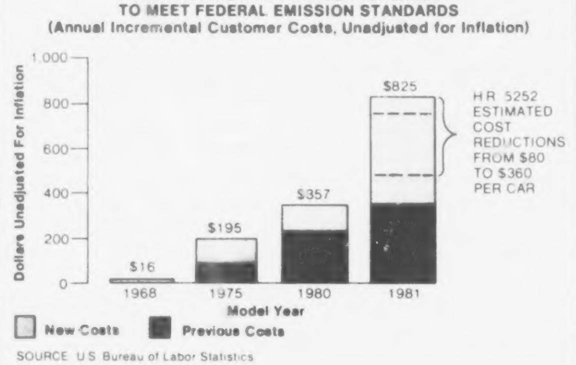
The new proposal would standardize state warranty requirements to provide uniformity with Federal requirements. According to MVMA, the amendment "is a fair compromise that adjusts the present Act to better balance air quality, marketplace and consumer interests."

Definition of Useful Life for Trucks

Under the Clean Air Act the "useful life" for passenger cars is defined as being half their average "total life," or five years or 50,000 miles. EPA, however, has mandated that the "useful life" for light- and heavy-duty trucks should be their "full life" or average period of use to engine retirement or rebuild. H.R. 5252 explicitly defines truck "useful life" as not to exceed one-half of the average actual life of any class or category of engines or vehicles.

According to MVMA, by changing "useful life" to "total life," EPA disregarded Congressional direction and increased the stringency of the emission standards. The "total life" concept will greatly increase the stringency of the deterioration factor which will have to be compensated for by lower initial emission levels.

AVERAGE NEW CAR PRICE INCREASES TO MEET FEDERAL EMISSION STANDARDS
(Annual Incremental Customer Costs, Unadjusted for Inflation)



SOURCE U S Bureau of Labor Statistics

Production Lead Time

Under the Clean Air Act the EPA administrator is directed to take into account lead time in establishing emission standards. H.R. 5252 would provide, when setting more stringent standards, minimum lead times of four years for new heavy-duty vehicles and engines and three years for all other new motor vehicles and engines.

> ***"H.R. 5252 also provides that EPA is to give appropriate consideration to such factors as costs of control technology, the applicability of technology to gasoline or diesel vehicles or engines, and the impact of proposed standards on fuel economy..."***

This proposed change in the law recognizes that a minimum lead time is needed to design and develop the changes in engine characteristics and in the technology necessary to meet stricter standards. A specified lead time permits the manufacturer to make changes in manufacturing processes and operations and to purchase and prepare any new test equipment and facilities.

Emission-Related Recalls

At the present time the Clean Air Act provides for the recall of vehicles or engines, which although properly maintained and used during their useful life, are found not to conform with emission standards.

H.R. 5252 would modify the Act to require that "a statistically valid and representative sample" be the basis upon which nonconformity is determined; require that only vehicles that are "maintained, used and adjusted to the manufacturer's specifications" be tested for determining whether non-conformity exists.

Averaging

"Averaging" has been fundamental to motor vehicle emission control regulations and ambient air quality measurements. The vehicle standards have been calculated to achieve reductions based on average emission levels from pre-controlled vehicles. It is the cumulative effect of total emissions — the average emissions of all in-use vehicles — rather than the output of an individual vehicle that has an impact on air quality. H.R. 5252 would expressly reaffirm the use of averaging as a basis for EPA mobile source regulation.

(Continued on page 35)

Clean Air Act

(Continued from page 23)

Unregulated Pollutants

At the present time the Clean Air Act requires manufacturers to determine whether unregulated emissions may "cause or contribute to an unreasonable risk to public health, welfare or safety." H.R. 5252 requires that EPA determine what is an unreasonable risk to public health and, if necessary, set new standards. The responsibility of the manufacturer to perform vehicle testing and report results to EPA is unchanged under the proposed legislation.

Certification Requirements

The Clean Air Act requires EPA to test vehicles, or to require the manufacturer to test them and demonstrate compliance with the standards before a certificate of conformity can be issued without which vehicles cannot be sold. H.R. 5252 would allow engineering evaluation as an alternative to vehicle testing and allow certificates to be issued for more than one year.

> ***"At the present time the Clean Air Act requires manufacturers to determine whether unregulated emissions may 'cause or contribute to an unreasonable risk to public health, welfare or safety.'"***

At the present time there is an elaborate schedule of reports, tests, mileage accumulation (4,000-mile and 50,000-mile fleets) and approvals outlined in complex EPA regulations for certification of emission systems. This schedule must be followed rigidly before a manufacturer can be granted a certificate of conformity. The certificate is valid for only one year, even if the same engine and emission control systems are to be installed in later year model cars and trucks.

MVMA asserts that "the current limitation on a certificate's applicability to a single model year compels a manufactuer to incur needless cost in an effort to obtain a certificate in each model year for a vehicle or engine whose emissions performance is essentially identical to the prior model year when the emission control requirements are the same."

Sale of New California Vehicles

EPA does not permit the sale of California-certified vehicles in the rest of the nation unless the vehicles also meet the Federal standards. H.R. 5252 would permit the sale of California vehicles in other states.

California sets vehicle emission standards based on its special problems as authorized by the law. These standards individually may be more stringent than Federal standards and must be collectively at least as protective of the public health and welfare as Federal standards. However, EPA precludes the sale of California-certified vehicles in the other 49 states. An amendment to the Clean Air Act, according to the manufacturers, is needed to allow the sale of California-certified cars anywhere in the United States to alleviate market disorders caused by EPA's interpretation of the Clean Air Act.

Compliance Procedures

The Clean Air Act authorized at least nine overlapping emissions-compliance enforcement programs. H.R. 5252 requires EPA to study the existing control programs, determine its efficiency, and, if appropriate, develop a "more practiceable approach" to the control of emission from mobile sources. EPA would be required to obtain public comment on any alternative approach and then submit a report on the study to Congress for approval before EPA could make any major revisions.

EPA currently employs two separate staffs and test laboratories to determine motor vehicle emissions compliance. The programs — preproduction certification, assembly line emission tests, and an after-production surveillance program — are complex, costly and burdensome to both industry and government, according to MVMA. In addition, there is no acceptable level of correlation between the three programs. ■

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NAFA Bulletin

The Magazine for Fleet Administrators
August 1982

1983 NEW CAR ACQUISITION SURVEY

BEST AVAILABLE COPY

The Executive Search Committee of the National Association of Fleet Administrators, Inc., is seeking an outstanding individual for the new position of *Deputy Director*.

The individual selected will function alongside our Executive Director, reporting with him to the President and Board of Trustees until his retirement.

NAFA currently has 27 chapters and 2,400 dues-paying members and affiliates in the United States and Canada. Headquarters is in New York City. The Association provides a full range of information and educational materials and programs to professional auto fleet administrators, the auto industry, governmental agencies, and other interested parties.

Previous association experience is highly desirable, but not mandatory. The position requires a confident, innovative self-starter, able to present and represent the Association well before all Publics, receptive to ideas and skilled at resolving conflicts.

You will require outstanding personal and professional references. You must have demonstrated experience and expertise in oral and written communication, people relations, budget management, event planning, and office management.

Only the very best will have the opportunity to fill the shoes of our present outstanding Executive Director.

To be considered, please submit a complete resume, with salary history, and three letters of recommendation to:

Chairman, Executive Search Committee
National Association of Fleet Administrators, Inc.
P.O. Box 1611, Northbrook, Illinois 60062

All inquiries will be acknowledged and held in strictest confidence.

letters

Haddon Disputes Innes's Safety Analysis

I am writing with reference to the article entitled, "Is it the Car or the Driver?" that appeared in the May issue of the *NAFA Bulletin*. The article was based on a presentation by J. Bruce Innes, Jr., given at a recent meeting of your organization's New York Chapter.

This paper is basically an attack on studies done by the Highway Loss Data Institute (HLDI) and Insurance Institute for Highway Safety (IIHS), which showed that small cars had worse injury and fatality experience than large cars and that the experience of domestic models was generally better than imported models. The paper does not contain well reasoned criticism of these studies, but instead is based on a complete misunderstanding of them and the methods of analysis used.

Amazingly, Innes attempts in the paper to build a detailed criticism of a HLDI study of insu-

(Continued on page 4)

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in this issue
AUGUST 1982

Letters 3

1983 Vehicle Specifications 6

NAFA's 1983 Acquisition Survey . 8
NAFA's 1983 Vehicle Acquisition Survey reflects the continued trend toward downsizing, with subcompacts and compacts representing 70% of the 1983 acquisition list.

Lipton's Walter Langseder: 35-Years of Service to the Profession 18
In both service to NAFA and dedication to a 35 year career as fleet manager for Thomas J. Lipton, Inc., Walter Langseder leaves behind a distinguished record of professional achievement. Now, on the verge of his retirement, this NAFA exclusive interview commemorates his service to the profession.

Unibody Repair: Costs and Technology 20
At NAFA's recent conference, Robert Devermann, vice president of Auto Damage Appraisers, spoke on the latest auto-repair technology brought about by the spreading popularity of unibody cars.

DOT's Analysis: Placing a Price on Safety 26
This article, adapted from the report "The Cost of Automobile Safety Regulations," issued from the Office of Program Rulemaking Analysis, explains the various costs incurred by auto manufacturers in complying with safety regulations.

Hotline 32
Joe Alacchi addresses the problems of air conditioning maintenance.

Raising Defenses Against Car Theft 34
Rod Birmingham of Aetna Casualty and Life Insurance suggests some helpful measures your drivers can take against auto theft.

Wholesaler/Broker Directory 35

Directory of Auto Auctions 36

Directory of Fleet Car Dealers .. 38

NAFA's 1983 Acquisition Survey:

Small Cars Will Take 70% Of 1983 New Car Orders

NAFA Exclusive

Fleet car buyers will continue on the same course in 1983 that they have followed for the past few years. Compacts are the order of the day.

More than 70 percent of the new car orders in the 1983 model year will be for compacts and sub-compacts, according to NAFA's new car acqusition survey.

A total of 108 commercial fleets operating 82,272 passenger cars and 19 Canadian fleets with 10,760 vehicles participated in this year's survey.

Among the highlights of the study are:

- Twenty-one fleets are planning major changes in the size of car they will order for 1983. Fourteen are switching to compacts; two to mid-size and compacts from large cars; three are moving to mid-size cars, while two are switching back to mid-size cars from compacts.
- A total of 30 fleets are calling for major changes in the engines they will have in their new cars. Twenty-four fleets will be using four-cylinder engines; three are switching to diesels, and three to six-cylinder engines for their new cars.
- Four-door sedans and five-door hatchbacks will account for more than seven out of every 10 new car orders.
- Orders for bottom line models will increase from eight percent of the new car orders in 1982 to fourteen percent in the 1983 model year.

Drug & Cosmetic Group

This group is represented by 15 fleets operating 11,175 passenger cars (871 company owned, 10,304 leased). The current composition of the group's fleet is 35 percent compact cars, 56 percent mid-size cars, and 9 percent large cars. Only one fleet in the group has any sub-compacts in its fleet at the present time, accounting for less than one half of one percent of the total.

During the 1982 model year the fleets in the Drug & Cosmetic group acquired 4,425 new cars; for 1983 they plan to acquire 4,984 new passenger cars. Again, less than one half of one percent will be sub-compacts (all acquired by only one fleet); 51 percent will be compacts; 46 percent will be mid-size cars, and 3 percent large cars.

Ninety percent of the group's new car acquisitions will be either two-door or four-door sedans, with the remaining ten percent distributed between three-door hatchbacks, five-door hatchbacks, station wagons and sport models. Three fleets in the group plan to acquire specialty cars in the 1983 model year. Although four fleets reported they had a few imports in service at the present time, none said they were planning to acquire any more in 1983.

Of the 1983 model year cars being ordered by the Drug & Cosmetic Group, 12 percent will be bottom line models; 43 percent middle line cars, and 45 percent will be top of the line cars.

Four fleets in the group said they were planning to make major changes in the car size used in their fleets — three were switching from mid-size to compacts; while one was moving down from large and mid-size vehicles to mid-size and compacts.

Six fleets in the group said they were planning to change the engine used in their 1983 models. Five plan to switch to four-cylinder engines. One of the five planned to drop the diesel engine, while another fleet said it was going to use diesels in its new mid-size cars.

No fleet in the group was planning to order standard transmissions in its 1983 model year car; neither was any fleet planning to change its policy on equipping its cars with air conditioning — all new cars of every size will have this option as standard equipment.

Fourteen fleets reported that their operators had a choice of make or model they wished to drive. In one fleet, the operator was given a choice of engine.

Within this group, 10 fleet managers reported they were responsible for acquiring corporate vehicles assigned to executives; five are responsible for acquiring executive pool cars, and two purchase personally owned cars for corporate executives.

Insurance Group

The Insurance Group is represented by 25 fleets operating 25,038 passenger cars (19,145 company owned, 5,893 leased). The current composition of the group's vehicles is 2 percent sub-compacts, 63 percent compacts, 33 percent mid-size, and 2 percent large cars.

During the 1982 model year this group acquired 8,993 new cars; for 1983 they plan to place 9,003 new vehicles into service. Three percent of their new cars will be sub-compacts; 81 percent will be compacts; 16 percent mid-size cars, and less than one half of one percent will be large cars.

Five fleets reported they are planning to make major changes in the size car they will use in their fleets. Four said they are planning to switch from mid-size to compacts while one said it was switching from large and mid-size to mid-size and compacts.

Fifty percent of the Insurance Group's 1983 model year new cars will be four-door sedans, while another 26 percent will be five-door hatchbacks. Two-door sedans will account for 11 percent of the new car orders, while the remaining 13 percent will be divided between three-door hatchbacks (5 percent), station wagons (7 percent), and sport models (1 percent).

Within the Insurance Group 17 percent of the 1983 model year cars will be bottom line models; 61 percent will be middle line cars, while 22 percent will be top of the line cars.

Three fleets in the group reported they plan to buy at least a few specialty cars, and two other fleets reported having a few imports in their fleet at the present time and both said they will acquire a few more during the 1983 model year.

Only two fleets in the Insurance Group reported they were planning to make any major changes in the engine used in 1983 model year cars. One is switching to four-cylinder engines for its new compacts, while the other is planning to use V-6 engines in its mid-size cars.

NAFA Car Categories

Sub-Compact: Wheelbase of less than 100 inches and a curb weight of under 2,300 pounds.

Compact or Small: Wheelbase between 100 and 106 inches and a curb weight of between 2,300 and 2,799 pounds.

Mid-Size: Wheelbase between 106 and 114 inches with a curb weight of between 2,800 and 3,399 pounds.

Large: Wheelbase of more than 114 inches and a curb weight of more than 3,400 pounds.

Two fleets are planning to order 1983 model year compact cars with standard transmissions. No fleet in the Insurance Group is planning to change its policy on ordering air conditioning for its new cars; the option is standard equipment on all cars ordered by almost every fleet in the group.

Sixteen fleets in the group give the operator some choice of car or equipment; 13 permit a choice (within limits) of the make of car to be ordered; nine permit the driver to select the model desired; one permits individual selection of the engine, and five will allow the driver to specify the transmission desired. Eight fleets give the operator the option of ordering additional equipment on the new car — and paying for it. In most fleets the choice is limited to vinyl roof and cruise control.

Sixteen fleet managers in the group reported they are responsible for acquiring corporate vehicles assigned to executives; 10 are responsible for acquiring executive pool cars, and six purchase personally owned cars for corporate executives.

Manfacturing-Consumer Group

The Manufacturing-Consumer Group is represented by 18 fleets operating 13,165 passenger cars (4,341 company owned, 8,824 leased). At the present time the composition of these fleets is two percent sub-compacts; 64 percent compacts; 25 percent mid-size, and 9 percent large cars.

The group acquired 4,971 1982 model year cars and plans to acquire 5,382 1983 model year cars. Five percent of the 1983 cars will be sub-compacts; 82 percent will be compacts; 11 percent mid-size, and 9 percent large cars.

More than 80 percent of the group's 1983 model year cars will be middle line vehicles; 17 percent will be top line cars, and only 2 percent will be bottom line cars.

Only two fleets in the Manufacturing-Consumer Group reported they were planning major changes in the size of car currently used. One fleet said it was switching from mid-size to compacts, while the other, which used mid-size, compact, and sub-compact cars, reported it was moving back to mid-size cars for 1983.

(Continued on page 10)

New Car Acquisition Survey

(Continued from page 9)

Fifty-five percent of the group's new car orders will be four-door sedans with another 12 percent going to five-door hatchbacks. Twenty-three percent of the orders will be for two-door sedans; station wagons will account for seven percent of the group's new car orders, with three-door hatchbacks getting one percent and sport models, two percent.

Eight fleets in the group plan to acquire some specialty cars during the 1983 model years. Three other fleets said they plan to acquire a few imports. Seven fleets reported they already have some imports in service.

Five fleets reported they are planning to change engines ordered for 1983 model year cars; four are switching to four-cylinder engines, while one will be ordering diesels in some new cars.

Only one fleet plans to use standard transmissions in its 1983 cars — compacts with four-cylinder engines. No fleet in the group is planning to change its air conditioning policy which now calls for that option to be standard equipment on practically all cars in every size category.

Thirteen fleets in the group give the operator some choice of car and equipment. Eleven permit a choice of make; nine the model desired; two allow the operator to select the desired engine, and seven give some leeway in ordering optional equipment — basically posi-trac axles and cruise control.

Twelve fleet managers in the group reported they are responsible for acquiring corporate vehicles assigned to executives; seven are responsible for acquiring executive pool cars, and five said they purchase personally owned cars for executives.

Manufacturing-Industrial Group

The Manufacturing-Industrial Group consists of 19 fleets operating 18,385 passenger cars (4,479 company owned, 13,906 leased). The current composition of the group's fleet is 7 percent sub-compact; 51 percent compact; 38 percent mid-size, and 4 percent large cars.

U.S. Composite Fleet

According to the survey responses, the composite fleet of the survey participants consisted of 762 units composed of:

Sub-Compacts	**23**
Compacts	**404**
Mid-Size	**282**
Large	**53**

These fleets plan to acquire 284 new cars during the 1983 model year. They will be distributed among the size categories in this way:

Sub-Compacts	**19**
Compacts	**185**
Mid-Size	**74**
Large	**6**

U.S. Composite Survey Fleet

1979-1982 Model Years

	1979	1980	1981	1982
Number of Cars in Fleet	806	794	750	762
Current Composition of Fleet				
Sub-Compact	8	24	15	23
Compact	210	234	248	404
Mid-Size	451	429	420	282
Large	137	103	67	53
Actual Previous Year Acquisitions	316	303	284	274
Planned New Car Acquisitions	336	308	302	284
Sub-Compact	7	31	21	19
Compact	174	154	205	185
Mid-Size	128	108	67	74
Large	27	15	9	6

During the 1982 model year this group put 5,987 new cars into service. For the 1983 model year the Manufacturing-Industrial Group plans to acquire 6,345 new cars. Twenty-four percent of the new cars will be sub-compacts; 52 percent will be compacts; 21 percent will be mid-size cars, and 3 percent will be large cars.

Five fleets in the group reported they are planning to make major changes in the car size ordered in 1983.

Sixty percent of the Manufacturing-Industrial Group's new car orders will go to four-door sedans; another 23 percent will be for five-door hatchbacks. Of the remaining 17 percent, 11 percent will be for station wagons, five percent for two-door sedans, and one percent for three-door hatchbacks.

Fifty-three percent of the group's orders will be for middle line cars; 36 percent for top of the line vehicles, and 11 percent for bottom line cars.

Eight fleet managers in the group said they were planning to change engines for 1983. Six reported they were switching to four-cylinder engines in compacts; one said the switch would be to diesels; the other is planning to use six cylinder engines rather than V-8's.

Five fleets in the group are planning to use standard transmissions in their 1983 model cars, primarily in compacts and sub-compacts with four-cylinder engines. However, no fleet in the group is planning to change its policy on air conditioning which is now standard equipment on every car in every size category in the group.

Seventeen fleets in the Manufacturing-Industrial Group reported their operators have some choice of car or equipment. Sixteen can choose the make desired from a selector list; nine have a choice of model; one can select the engine, and six the transmission. Ten fleets give the operator a choice in ordering additional equipment or accessories for the company-provided car. In most fleets this is limited to vinyl roofs and posi-trac axle.

(Continued on page 12)

New Car Acquisition Survey

(Continued from page 10)

Fourteen fleet administrators reported they were responsible for acquiring corporate vehicles assigned to executives; 11 are responsible for acquiring executive pool cars, and seven said they purchased personally owned cars for executives.

Chemical & Petroleum Group

The Chemical & Petroleum Group is represented by 12 fleets operating 8,255 passenger cars (4,799 company owned, 3,456 leased). At the present time the composition of these fleets is 29 percent compacts; 42 percent mid-size cars, and 29 percent large cars. One fleet reported having a few subcompacts in service, but they account for much less than one half of one percent of the total fleet.

During the 1982 model year the group acquired 2,501 new cars; for 1983 they plan to put 2,556 new cars into service. Thirty percent of the 1983 model year cars will be compacts; 61 percent will be mid-size cars, and 9 percent will be large cars. No fleet in the group said it was planning to order subcompacts in 1983.

Forty-one percent of the group's new cars will be bottom line vehicles (the largest percentage of any sales and service group); 58 percent will be middle line cars, while only one percent will be top of the line models.

An amazing 97 percent of the Chemical & Petroleum Group's new car orders will go to four-door sedans. Five-door hatchbacks, station wagons, and two-door sedans will each account for one percent of the group's new car orders.

Three fleets in the group said they now have a few imports in service, no fleet in the group reported it was planning to acquire any imports during the 1983 model year.

Four fleets said they were planning to make major changes in the size of car acquired in 1983. Two reported they were switching from large to mid-size cars; one is switching from mid-size to compacts, while the fourth said it was dropping large cars and moving to both compacts and mid-size ones.

Five fleets said they were planning to change engine sizes for 1983. Four are switching to four-cylinder engines, while one is planning to use six-cylinder engines instead of V-8's.

No fleet in the group is planning to use standard transmissions in its 1983 cars and none is planning to make any changes in its policy of ordering cars with air conditioning, now a standard item on almost all cars in every fleet.

Ten of the 12 fleets give the operator some choice of car and equipment. All 10 permit the operator to choose the make desired; two allow choice of model, and six permit the driver to order extra equipment or accessories.

Eleven of the 12 fleet managers in the Chemical & Petroleum Group reported they were responsible for acquiring corporate vehicles assigned to executives. Six are also responsible for acquiring executive pool cars, but none purchase personally owned cars for corporate executives.

Food & Beverage Group

The Food & Beverage Group is represented by nine fleets operating 3,246 passenger cars (1,968

(Continued on page 14)

1983 New Car Acquisition Survey Summary

	Current Composition									Fleet Acquisition by Category			
Group	Number of Cars	Owned	Leased	Sub-Compact	Compact	Mid-Size	Large	1982 New Car Acquisitions	1983 Planned New Car Acquisitions	Sub-Compact	Compact	Mid-Size	Large
U.S. SALES & SERVICE													
Drug & Cosmetics (15)	11,175	871	10,304	31	3,933	6,262	949	4,425	4,984	5	2,543	2,300	136
Insurance (24)	25,038	19,145	5,893	538	15,852	8,170	478	8,993	9,003	312	7,258	1,425	8
Manufacturing—Consumer (18)	13,165	4,341	8,824	218	8,4808	3,265	1,202	4,971	5,382	277	4,419	592	94
Manufacturing—Industrial (19)	18,385	4,479	13,906	1,319	9,280	7,027	755	5,987	6,345	1,565	3,293	1,315	172
Chemical & Petroleum (12)	8,255	4,797	3,456	2	2,358	3,490	2,405	2,501	2,481	—	736	1,512	233
Food & Beverage (9)	3,246	1,968	1,278	23	2,529	561	133	1,666	1,487	—	1,217	228	42
Miscellaneous (11)	3,008	1,151	1,857	25	869	1,586	528	1,087	989	21	427	457	84
Total (108)	82,272	36,754	45,518	2,156	43,305	30,361	6,450	29,630	30,671	2,180	19,893	7,829	769
CANADA													
Sales & Service (17)	3,560	990	2,570	20	1,635	1,280	625	1,174	1,254	6	685	298	60
Government (2)	7,200	7,200	—	200	4,200	400	2,400	1,880	1,800	75	875	150	700
Total (19)	10,760	8,198	2,570	220	5,835	1,680	3,025	3,054	3,054	81	1,560	448	760
Grand Total (127)	93,032	44,944	48,088	2,376	49,140	32,041	9,475	32,684	33,725	2,261	21,453	8,277	1,529

New Car Acquisition Survey

(Continued from page 12)

company owned, 1,278 leased). The current composition of the group's fleet is 1 percent sub-compacts; 78 percent compacts; 17 percent mid-size cars, and 4 percent large cars.

The group placed 1,666 new cars in service during the 1982 model year; for 1983 the fleets plan to acquire 1,487 new cars. None of the new cars will be sub-compacts; 82 percent will be compacts; 15 percent mid-size cars, and 3 percent large cars.

Fifty-five percent of the new car orders will be four-door sedans with another 28 percent going to five-door hatchbacks. The remaining 17 percent of the orders will be divided up between three-door hatchbacks (eight percent), station wagons (six percent), and two-door sedans (three percent). No fleet in the group is planning to order sport models.

One fleet in the group is planning to acquire a few specialty models and one reported it will acquire some imports. At the present time three fleets in the Food & Beverage Group have some imports in their fleets.

None of the fleet managers in the group reported that they were planning to make major changes in the size of car acquired during the 1983 model year.

One fleet manager said there would be a change in vehicle engines in the 1983 model year — a switch to four-cylinder engines. No fleet in the group is planning to use standard transmissions in its 1983 model year cars, and none are planning to change their air conditioning policy.

Five fleets in the group reported that they give their company-car operators some choice of car and equipment. Five permit choice of make of car; four permit choice of model, while three permit the driver to select some accessories and extra equipment. Items most often made available (at extra cost to the driver) are vinyl roof, posi-trac axle, and cruise control.

Five fleet managers reported they were responsible for acquiring corporate vehicles assigned to executives; four said they were responsible for acquiring executive pool cars, and four said they purchased personally owned cars for executives.

Miscellaneous Group

The Miscellaneous Group consists of 11 diverse fleets that do not fall into any of the association's primary classifications. They include agricultural and forest products; real estate; banking; mass merchandising, and an automobile club. These fleets operate 3,008 passenger cars (1,151 company owned, 1,857 leased). The current composition of the group's fleet is sub-compact, 1 percent; compact, 29 percent; mid-size, 53 percent, and large cars, 17 percent.

During the 1982 model year the group acquired 1,087 new cars. During the 1983 model year they plan to put 989 new cars into service. Of these, 2 percent will be sub-compacts; 43 percent compacts; 46 percent mid-size, and 9 percent large cars.

New Car Orders By Body Style — U.S. Fleets

(percentage of new car orders)

3-door hatchback	3%
5-door hatchback	17%
station wagon	7%
2-door sedan	14%
4-door sedan	55%
sport model	1%

Only one fleet in the group said it was planning to make any major changes in the size car used in its fleet; it is switching from mid-size to compacts.

Sixty-four percent of the group's new car orders will go to four-door sedans with another 9 percent for five-door hatchbacks. Thirteen percent of the new car orders will be for two-door sedans; nine percent for station wagons, and five percent for three-door hatchbacks.

Two fleets in the group reported they have some specialty cars in operation, while two others say they have some imports in their fleets. However, only one fleet said it planned to acquire any imports during the 1983 model year.

Three fleets reported they are planning to change engines for 1983. They are switching to four-cylinder engines for compacts and mid-size cars. One fleet said it was planning to use standard transmissions in the sub-compacts and no fleet will change its air conditioning policy.

Seven fleets in the Miscellaneous Group said their operators have some choice of car and equipment. All seven said the driver could select the make desired; three permitted a choice of model, and five allow the operator to select accessories and extra equipment. The item most often selected, according to the fleet managers, is cruise control.

All 11 fleet managers in the group said they were responsible for acquiring corporate vehicles assigned to executives, however, none was responsible for acquiring executive pool cars, and only one purchased personally owned cars for executives.

(Continued on page 16)

New Car Orders By Size and Line
U.S. Fleets

(percentage of new cars being ordered)

			Line	
Car Size	Total	Top	Middle	Bottom
Sub-Compact	7%	*	6	1
Compact	65%	14	40	11
Mid-Size	25%	9	15	1
Large	3%	1	1	1
Total	100%	24%	62%	14%

*Mentioned but less than ½ of 1%.

New Car Acquisition Survey

(Continued from page 14)

Canada

There are 19 Canadian fleets represented in the 1983 model year new car acquisition survey. They have a total of 10,760 passenger cars (8,190 company owned, 2,570 leased). It should be pointed out that two of these 19 fleets are very large government units with 7,200 vehicles.

The sales and service fleets in the Canadian Group have a total of 3,560 units of which 990 are company owned and 2,570 leased. The current composition of the commercial fleets is 1 percent sub-compact, 46 percent compact, 36 percent mid-size, and 17 percent large cars. During the 1982 model year the commercial fleets acquired 1,174 new cars; in the 1983 model year they plan to put 1,254 new cars in service.

Of the new cars that will be acquired in the 1983 model year, 1 percent will be sub-compacts, 65 percent will be compacts, 28 percent, mid-size, and 6 percent, large cars.

Sixty-eight percent of the 1983 models that will be ordered are going to be four-door sedans; 13 percent will be two-door sedans, 15 percent station wagons, 2 percent each three-door hatchbacks and sport models.

Four fleets reported they had some specialty models in service, while two fleets said they had some imports in operation. One fleet manager responded to the question by saying, "In Canada all cars are imports."

(Continued on page 32)

Standard Equipment On All Cars

(At No Charge to Operator)

Group	Radio	Power Disc Brakes	Power Steering	Automatic Trans	S/B/R Tires	Air Cond.	Tinted Glass	Vinyl Roof	Posi-Trac Axle	Headbolt Heater	Cruise Control
Manufacturing-Industrial											
Large (9)	9	*	*	*	7	9	9	2	1	—	9
Mid-Size (15)	15	14	15	15	12	15	15	1	2	2	10
Compact (16)	16	16	16	16	13	16	16	1	1	1	12
Sub-Compact (7)	7	7	7	7	3	7	7	—	1	—	5
Manufacturing-Consumer											
Large (10)	10	*	*	*	9	9	9	7	1	1	7
Mid-Size (11)	11	10	11	10	11	11	10	4	1	2	7
Compact (16)	16	15	16	15	13	16	15	1	—	3	11
Sub-Compact (3)	3	3	3	2	2	3	3	—	—	—	2
Food & Beverage											
Large (5)	5	*	*	*	4	5	5	2	1	1	3
Mid-Size (6)	6	5	6	6	5	6	6	2	1	1	4
Compact (9)	9	8	9	9	7	8	7	—	—	1	4
Sub-Compact (2)	2	1	2	2	2	2	2	—	—	—	1
Chemical & Petroleum											
Large (10)	10	*	*	*	7	9	9	3	1	—	9
Mid-Size (10)	10	10	9	7	7	9	10	2	2	1	9
Compact (6)	6	6	5	4	4	6	6	—	—	—	4
Sub-Compact (1)	1	1	1	1	1	1	1	—	—	—	1
Insurance											
Large (10)	10	*	*	*	8	9	9	3	1	1	4
Mid-Size (17)	17	17	17	17	11	17	16	2	—	2	7
Compact (21)	21	21	21	21	15	21	20	2	—	3	10
Sub-Compact (5)	5	5	5	5	4	5	5	1	—	—	3
Drug & Cosmetics											
Large(7)	7	*	*	*	6	7	7	3	—	—	4
Mid-Size (14)	14	14	13	14	12	14	14	3	—	1	9
Compact (11)	11	11	11	11	9	11	11	2	—	1	7
Sub-Compact (1)	1	1	1	1	1	1	1	—	—	—	—
Miscellaneous											
Large (11)	11	*	*	*	9	10	9	6	1	1	8
Mid-Size (11)	11	11	11	11	10	11	9	2	—	1	7
Compact (7)	7	7	7	7	6	6	5	—	—	—	3
Sub-Compact (5)	5	4	4	4	4	4	3	—	—	—	—
Canada											
Large (12)	12	*	*	*	8	11	12	5	2	6	4
Mid-Size (16)	16	16	16	14	12	15	12	2	1	10	5
Compact (12)	12	12	12	11	8	9	9	—	—	7	2
Sub-Compact (5)	5	4	4	3	2	3	3	—	—	1	1

NOTE: The figure in ( ) beside the car size indicates the number of fleets in each group ordering that size car. The number under the items of equipment is the number of fleets in each group ordering the item for every car of that size at no expense to the operator.

*Standard equipment on Large cars.

hotline

Air Conditioner Maintenance

In response to many hotline caller inquiries regarding air conditioning problems, Joe Alacchi offers these helpful comments on air conditioning maintenance and diagnosis.

Air conditioning cools primarily by lowering the humidity. Therefore, while the air leaving the ducts may be very cool or even cold, the temperature of the vehicle may be only a few degrees cooler than the outside ambient air. The passenger feels cool due to the lowering of the humidity. An air conditioner, while operating on refrigeration principles, is not a refrigerator.

There are several quick checks that can be made to verify the soundness of the air conditioner's operation. Set the blower to HI; set the air conditioner control (A/C) to MAX, and the temperature control to COLD. With the engine at normal operating temperature, increase the engine speed to fast idle and feel the temperature of the air leaving the air conditioning ducts. It should feel cool to cold.

Another method is to insert a thermometer into the outlet duct and compare the temperature with that of the outside air. At 80° ambient, a duct temperature of about 34° to 42° would be considered normal. Higher humidity will tend to cause higher duct temperatures. With a cycling clutch air conditioning system this discharge temperature should be taken just before the clutch disengages.

The most accurate method is to compare the compressor high pressure to the evaporator pressure while comparing the ambient temperature to the duct air temperature.

An alternate method that is quick and effective can be executed while the engine is at normal operating temperature and running at normal (curb) idle. Set the selector control to "NORM"; set the "TEMP" control to full "COLD" and the blower on "HIGH." "Hand-feel" the temperature of the evaporator inlet line *and* the accumulator surface while the compressor is engaged. If both are equally cool, and cooler than the ambient air, the system is functioning properly. If the inlet pipe feels cooler than the accumulator surface, or if the inlet pipe has an accumulation of frost, this indicates a low refrigerant charge.

While most manufacturers suggest a procedure for adding refrigerant, the better method would be to completely discharge the system, correct the leak, and evacuate and recharge the system with the proper amount of refrigerant. The logic is that a loss of refrigerant indicates a leak. A leak, even the

New Car Acquisition Survey

(Continued from page 16)

Six Canadian fleets reported they are making major changes in the car size being ordered for 1983. Three are moving down from large to midsize cars, while the other three were switching from mid-size to compacts.

Three Canadian fleets reported they are planning engine changes for the 1983 model year. All three are switching from 8's to 6-cylinder power plants. No Canadian fleet is planning to order standard transmissions on its 1983 model year cars and none are planning to change their policies on use of air conditioning.

Twelve of the 17 Canadian sales and service fleets give the operator some choice of car and equipment. All 12 permit choice of make; 10 allow choice of model, and 8 allow the driver to add extra equipment and accessories to the company-provided car.

By far the most widely chosen piece of optional equipment is cruise control.

All 17 Canadian fleet managers reported they are responsible for acquiring corporate vehicles assigned to executives; four are responsible for acquiring executive pool cars, but only one purchases personally owned cars for corporate executives. ■

Lipton's Walter Langseder

(Continued from page 24)

ing people; getting people to do as you wish. That's the trick. I have found that if you give a person something they dislike, they are going to tell you what is wrong with it. But, if you give them something palatable, they will make it work.

"Making a career in fleet management really depends on how far you want to go with it. The building blocks are judged by the fleet manager's responsibilities. If you only have one of the four responsibilities I mentioned earlier, you cannot command the same considerations that someone who has all four responsibilities can. If you have the building blocks for all four, you can reach any height you wish.

"With some mechanical and accounting background, the ability to express yourself, creativity, and the ability to see the problem and find its solution, you can be a successful fleet manager and gain recognition and support from management."

When asked if he had to do it all over again, what would he do differently, Walt replied, "Nothing. It's been a wonderful and rewarding experience."

On behalf of the officers and members of the National Association of Fleet Administrators, Inc., we wish Walt all the best of luck in the future. ■

DOT's Analysis:

Placing a Price

This article is based on a report, "The Cost of Automobile Safety Regulations," published by the Office of Program and Rulemaking Analysis, National Highway Traffic Safety Administration, U.S. Department of Transportation. It provides a rare insight into the thinking of the Federal department most directly concerned with rules and regulations relating to automotive safety and obviously reflects the government's point of view on the cost of vehicle safety standards.

Over the past 12 years the National Highway Traffic Safety Administration (NHTSA) has issued more than 50 motor vehicle safety standards. These standards were issued in an effort to decrease the incidence of motor vehicle accidents and to provide increased protection for occupants when accidents did occur.

Changes made in response to these standards (by the manufacturers) have improved motor vehicle safety in numerous ways, including improved windshield penetration resistance, collapsible steering columns, interior padding, lap and shoulder belts, side marker lights, head restraints, reduced flammability of interior materials, side-door strength, improved brakes, and leak resistant fuel systems.

These are significant safety benefits, in terms of the reduced fatalities and injuries associated with these changes. It is estimated (by NHTSA) that motor vehicle safety standards have resulted in the reduction of at least 83,000 deaths in the 1966-1981 period. As newer, safer vehicles replace the older, less safe ones, about 10,000 additional lives will be saved each year. It is estimated that a 1982 model year car is about 25 percent safer — in protecting occupants from injury or death — than a pre-standards, model year 1965 or earlier car.

As with all goods and services, there are costs associated with these benefits that are ultimately borne by the average consumer. This report will examine the nature of these costs, those that directly increase the price of the automobile as well as those that come from indirect influence on the overall economy. The purpose is to inform the public of the relative price they are paying for vehicle safety and provide a perspective on the nature of the cost burden to motor vehicle manufacturers.

Direct Cost of Safety Regulations

When an automobile manufacturer initiates changes that improve the safety of a vehicle, it will usually incur higher production costs for that vehicle. These increased costs reflect the additional labor, materials, investment, design, and testing that are necessary to comply with federal standards. These costs, which will be referred to as direct manufacturing costs, are the most visible and usually the most significant costs associated with federal safety standards.

This report identifies and discusses six components of the direct costs of NHTSA's automobile regulations. They are 1) variable costs; 2) capital costs; 3) research and development costs; 4) engineering and launch costs; 5) compliance testing costs, and 6) administrative costs.

Variable Costs

Variable costs basically are those that vary with production volume. Safety regulations often result in the addition of new equipment or the strengthening of structural components. Such changes are typically accomplished by adding or changing material, which sometimes increases the complexity of the assembly process. The additional labor and materials that are needed to install a safety feature are the primary examples of the variable costs that result from safety regulations. Other less significant variable costs include additional energy usage, scrappage (defective production that must be discarded) and wastage (excess, unusable materials). Overall, these costs account

on Safety

for about 63 percent of the final price charged to consumers.

An examination of company financial statements indicates that variable costs represent 75 percent of net sales. Net sales revenue is derived from manufacturer wholesale price levels. Industry data indicate that weighted average dealer discount for domestic manufacturers is 19 percent. That is, the retail list price of a new automobile is, on average, 19 percent higher than the price the dealer paid to the manufacturer.

NHTSA estimates that about $370 of the price of a 1982 automobile is a result of federal safety regulations. This amounts to an annual consumer cost of about $3.7 billion (assuming sales of 10 million annually). The variable cost portion of this amount is about $2.3 billion annually in higher labor, materials, and energy costs to meet federal safety standards.

Capital Costs

The incorporation of new safety features in a vehicle can result in redesign of certain vehicle systems. When this occurs, manufacturers must invest in new tooling or equipment to produce the newly designed systems, or in new or redesigned plants and facilities.

Unlike variable costs, capital costs are directly associated with short term fluctuation in production volume; they are directly related to planned production volumes and as long as those production capacities are not exceeded, they will remain "fixed" regardless of the number of vehicles sold. Although capital expenditures are usually incurred in a given year, their cost is charged to the product as the assets' useful life is used up. Typically, for tooling this takes three to five years. It may be as long as 20 years for the investment in a new plant. Thus, an investment of $100 million for tooling in 1980 may be allocated to the production of 1981, 1982, and 1983 as well.

In recent years the domestic industry has initiated extensive downsizing programs to meet fuel economy standards. It is possible that some of the new tooling needed for these programs was more costly than it would have been in the absence of safety requirements. Bumpers, for example, might have been smaller and less complex and new tooling would still be required for features such as side door beams and head restraints. To some extent, additional recurring capital costs may be associated with subsequent redesigns of vehicles that already meet safety requirements. It is not possible to make any estimate of such costs.

If enough leadtime is provided, many safety changes can be made with minimal or no increases in capital costs. Manufacturers periodically redesign their vehicles every four to five years to incorporate both styling changes and major performance improvements. In recent years redesign programs have been accelerated to meet the demand for fuel efficient vehicles. To meet safety standards it may be necessary to change the thickness or shape of a vehicle structure. If such changes are made before the vehicle is redesigned, significant retooling costs may be necessary. However, if adequate leadtime permits the manufacturer to incorporate the safety requirements in the normal redesign cycle, no additional tooling may be necessary to meet the safety standard.

Research and Development Costs

Before the final design of a new safety feature can be completed, research and testing must be done to establish the most practical approach to meeting the new requirement. Like capital costs, these costs do not vary with production. However, unlike capital costs, they are charged only to the year in which they occur. There is very little data available to establish the amount of research and development expense that is associated with safety regulations. The only publicly available figures that break out a similar cost are those from General Motors' latest 10K report to the Securities and Exchange Commission. This indicated that in 1980, GM spent about $468 million on research, engineering, reliability, inspection, and testing for automotive safety.

Table 1
General Motors R&D Expenditures
(Millions of Dollars)

	Total R&D Expenditures	R&D Expenditures for Safety	Percent of Total R&D for Safety
1975	1114	273	24.5
1976	1257	316	25.1
1977	1451	379	26.1
1978	1633	420	25.7
1979	1950	464	23.8
1980	2225	468	21.0

Source: General Motors 10K report to the Securities and Exchange Commission.

(Continued on page 28)

Placing a Price on Safety

(Continued from page 27)

Engineering and Launch Costs

After the research department has determined the most practical and economically feasible approach to a specific safety problem, manufacturers must invest resources in the design and development of the new safety systems. The necessary changes must be designed, prototypes must be built and tested, and preparations made for assembly line production. Like research and development costs, these are fixed costs that are charged to the year in which they occur. NHTSA estimates that engineering and launch costs average about 40 percent of capital costs for the major domestic manufacturers. NHTSA has estimated tooling costs to be about $92 million a year and engineering and launch costs to be about $37 million annually.

Compliance Testing

In order to assure that these redesigned vehicles will, in fact, satisfy the requirements of a safety standard, manufacturers must put their vehicles through a compliance testing program. Costs involved in determining compliance include equipment, facilities, personnel, test vehicles, and prototype models. Testing costs will vary, depending on the nature of the standard. The most expensive type of testing would involve destructive crash testing of prototype vehicles. Eight motor vehicle safety standards are tested for compliance through destructive testing. Some of these requirements involve multiple tests, but others can be combined with tests for different standards or the testing done to insure normal product safety levels.

Administrative Costs

In order to support the development, production, and reporting requirements of a federal safety standard, manufacturers must incur some level of administrative burden. The costs associated with safety standards include the salaries of managers, lawyers, clerks, typists, etc., whose skills are needed to address the various issues and requirements associated with safety standards. No comprehensive data is available to estimate the total administrative cost of regulations. A very rough estimate has been developed from data supplied by GM in a letter to then President Carter in 1978. In this letter GM listed their total administrative costs for all forms of regulation including vehicles, plant and facilities, and occupational health and safety, for the years 1974, 1975, and 1976. During this time, GM's total administrative costs averaged about $200 million annually. According to NHTSA, safety regulations would be responsible for about 40 percent of the total administrative expenditures.

Table 2
Ratio of Variable Costs to Net Sales
1970-1980

	GM	Ford	Chrysler	Total Domestic New Car Sales (Millions)
1970	68.2	73.0	79.8	7.1
1971	65.0	73.0	77.8	8.7
1972	64.8	74.0	79.9	9.3
1973	66.4	75.0	79.6	9.7
1974	71.5	80.0	86.1	7.4
1975	72.4	81.1	89.5	7.1
1976	69.6	78.0	81.5	8.6
1977	69.2	77.0	83.9	9.1
1978	69.6	78.6	86.4	9.3
1979	71.9	79.5	90.5	8.3
1980	76.0	84.9	93.7	6.6

Consumer Prices

Obviously the costs are translated into higher automobile prices for the consumers. Various estimates have been made of the current consumer cost of safety regulations. In 1981 GM Chairman Roger B. Smith put the cost at $425 per automobile. The Center for the Study of American Business at Washington University in St. Louis estimated (in 1977) that the cost of required safety equipment was about $422. In current dollars, this would be about $633.

The basis for the 1977 estimate of $422, and possibly for some industry estimates, is data collected by the Bureau of Labor Statistics for use in deleting the cost of automobile safety improvements when computing the Consumer Price Index. These costs are deleted because they are considered to represent increased consumption rather than higher prices for the same vehicle. That is, the higher prices for a safer car are presumed to reflect a greater utility to the public and are thus, by definition, not inflationary. The Bureau of Labor Statistics would yield an increase of $515 to the price of a 1981 car. This increase included all standard-related cost increases, including those first made in 1968 (about $50 worth) but excludes voluntary changes made by manufacturers which are not related to safety regulations.

In assessing the significance of price changes caused by safety requirements, other causes such as inflation must also be considered. In 1975, BLS began publishing the average price increase of the new automobile sample used in compiling the Producer Price Index. By comparing these overall increases with the corresponding assessment of safety standard costs, we can estimate the relative contribution of safety requirements to rising automobile prices.

All of these factors, together with the cost of environmental and safety standards, have contributed to higher automobile prices. Because of

(Continued on page 30)

Placing a Price on Safety

(Continued from page 28)

the magnitude of recent mid-year increases (which are pure price increases and contain no new required safety or emissions equipment) it is likely that the safety standards are actually responsible for a smaller percentage of recent price increases.

It should be noted that in recent years economic conditions have not allowed manufacturers to recoup all of their manufacturing cost increases. The table lists the ratio of variable costs to net sales from 1970 to 1980 for the three major domestic manufacturers and the sales levels associated with those ratios. Over this 11-year period there was a general trend of variable costs to increase faster than sales revenue. In addition, twice during the period, in 1974-1975, and in 1979-1980, demand for new cars dropped significantly and dramatic increases occurred in the variable cost/net sales ratio for those years. These increases imply selling prices for vehicles that do not fully reflect increases in variable manufacturing costs.

Fuel Costs

Changes made in vehicle designs to meet federal safety standards may add additional weight to the regulated vehicles. This additional weight will decrease the efficiency of the vehicle and increase fuel consumption. According to NHTSA studies, the mandated safety standards have added 197 pounds to the average car. The two major segments of this increase are the bumpers and side door guards. General Motors has estimated that lifetime fuel consumption drops one gallon for every one pound reduction in vehicle weight.

Insurance Costs

The cost of owning and operating an automobile is influenced by purchase price, fuel costs, maintenance and repair costs, taxes, and insurance premiums. Although safety regulations may tend to increase the purchase price and fuel consumption of automobiles, they will tend to reduce the cost of automobile insurance premiums. This effect results from a reduction in the frequency and extent of property damage, as well as from a reduction in deaths and injuries, thus reducing medical costs for accident victims.

NHTSA has estimated, for example, that vehicle protection offered by improved bumper systems reduces insurance premiums for collision and liability coverage by $150 to $230 over the lifetime of the vehicle.

A similar reduction occurs in the cost of first party personal injury premiums. The roughly 11,000 fatalities and tens of thousands of injuries

Table 3
Breakdown of New Model Price Increases 1975-1982 Models

	Safety	Emissions	Total Regulatory	Non-Regulatory	Total Increase
1975	$10.70	$119.20	$129.90	256.10	386.00
Percent of Total	2.8	30.9	33.7	66.3	100.0
1976	13.40	7.60	21.00	177.00	198.00
Percent of Total	6.8	3.8	10.6	89.4	100.0
1977	6.95	14.30	21.25	361.05	382.30
Percent of Total	1.8	3.8	5.6	94.4	100.0
1978	0	9.99	9.99	414.50	424.49
Percent of Total	0	2.4	2.4	97.6	100.0
1979	5.75	12.10	17.85	282.45	300.30
Percent of Total	1.9	4.0	5.9	94.1	100.0
1980	13.29	118.04	131.33	234.52	365.85
Percent of Total	3.6	32.3	35.9	64.1	100.0
1981	4.29	155.55*	159.84	376.30	536.14
Percent of Total	0.8	29.0	29.8	70.2	100.0
1982	$ 0	5.00**	5.00	557.54	562.54
Percent of Total	0	0.9	0.9	99.1	100.0
1975-1982 Total	$54.38	$441.78	$496.16	2659.46	3155.62
Percent of Total	1.7	14.0	15.7	84.3	100.0

Source: Bureau of Labor Statistics

* On 1981 models, manufacturers installed on-board computers to supply pollution, fuel economy, and diagnostic control to their vehicles. The total BLS quality adjustment for this feature and a few minor changes to catalytic converters was 466.65. This study assumes that one-third of this cost is attributable to emission controls.

**On 1982 models, BLS combined quality adjustments for fuel economy and emissions to protect the confidentiality of data submitted to them in one model that had an emission change. $5.00 is NHTSA's estimate of the weighted value of the minor change made on the single vehicle in the BLS sample with emission changes.

that are avoided annually because of improved vehicle safety features represent reduced medical, funeral and rehabilitation expenses which could otherwise be paid by insurance companies and passed on to consumers through higher premiums.

A very rough estimate of the value of these premiums can be computed using data supplied by the insurance industry. National Mutual Insurance Companies have estimated that a mandatory passive restraint standard would result in a 24.6 percent reduction in first and third party personal injury premiums. This estimate assumed that compliance with such a standard would result in the installation of devices that would be estimated to be between 40 and 66 percent effective in reducing various injuries.

Total first and third party personal injury premiums in 1979 were $17.3 billion. Estimated 1981 premiums are $20 billion annually with savings due to existing safety standards about $3 billion annually, or $25 per car.

Net Cost of Safety Standards

Any assessment of the effects of safety standards must balance the cost of the standards against the benefits they produce. Although the major focus of this report by NHTSA is costs, in order to maintain this perspective it is appropriate to briefly examine the beneficial effects of safety standards as well.

NHTSA is required by Executive Order 12291 to initiate reviews of currently existing regulations. So far, reviews have been completed for four separate standards: FMVSS 214, side-door strength, part 581, the bumper standard, FMVSS 202, head restraints, and FMVSS's 203 and 204 covering driver impact protection from the steering column. The results of these reviews show that:

1) Standard 214 appears to provide effective occupant protection because it greatly reduces the likelihood of deaths or severe injury in single vehicle side-door impact crashes. The standard costs about $265,000 (1981 dollars) for every fatality that it eliminates.

2) It is not certain whether front bumper systems are cost effective. Rear bumper systems are not, and have never been cost effective since the promulgation of the standard in 1973.

3) Head restraints have significantly reduced whiplash injuries in rear impact crashes. On average, the restraints used in the 1979 model mix result in a cost of $5,000 per injury avoided.

4) The equipment installed in response to Standards 203 and 204 reduced the overall risk of driver fatality in a frontal crash by 12 percent. The standard costs $52,000 (1981 dollars) for every fatality that it eliminates. ■

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NAFA Bulletin
The Magazine for Fleet Administrators
September 1982

LEASING COMPANY RECOMMENDATIONS FOR

The Final Decision Is Yours

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news highlights

Start Your Educational Year by Attending One of NAFA's Regional Seminars this Fall

"Knowledge is power. Power to become more efficient, more effective and power to become the real professional." NAFA's Founding Member and Past President Walter Langseder, manager/corporate fleet, Thomas J. Lipton, puts the issue of professionalism in these clear cut words.

Education can provide you with the knowledge to assure your future in fleet management. The time to continue learning is now. Management won't wait for you! The best way to kick off your educational year is by attending one of the four regional seminars being offered by NAFA this fall. NAFA's Educational Committee Chairman Peter Greohrs comments: "The regional seminar series is one of NAFA's most important programs to further your growth and professionalism in fleet management."

The subjects to be covered in each seminar are: Life Cycle Costing, Fleet Management & Communications, Preventive Maintenance — Today and Tomorrow, and Effective Communications. These topics, presented by experts in the field, will give you the knowledge and the power to be a "real professional."

Life Cycle Costing

Life cycle cost analysis is a method by which all costs associated with owning and operating a fleet vehicle — purchase price, fuel, maintenance and repair, insurance, parking, tolls — can be reduced to a single figure. This figure can then be compared against several vehicle choices to determine which has the lowest life cycle cost. It requires careful, accurate and detailed record keeping. Thomas J. Timbario of Mueller Associates, Inc., a consulting engineering firm, will give this presentation at the Montreal, Philadelphia and Nashville seminars. Terry R. Flesia, manager, Auto & Truck Fleet, Ingersoll-Rand Co., and author of the book "Successful Business Car Management" will handle this subject at the San Francisco meeting. Both speakers will show you how you can achieve a valid measurement of all your vehicle expenses.

Seminar Subjects

Life Cycle Costing
Fleet Management & Communications
Preventive Maintenance—Today and Tomorrow
Effective Communications

Management and Communications

The first course for the Wharton Certified Fleet Management Program is entitled "Fleet Management and Communications." The topics included in this course are: evolution of management theory; strategic planning; aids for planning and problem solving; authority, delegation, and decentralization; managing organiza-

(Continued on page 4)

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in this issue

SEPTEMBER 1982

NAFA's Regional Seminars 3
Agenda will offer a wide range of topics to enrich fleet management skills.

Letters 4

Leasing Company Recommendations 8
Major leasing companies offer recommendations for fleet managers.

FHWA Reports on Operating Expenses 18
A government report on the "Cost of Owning and Operating Automobiles and Vans 1982."

Chapter News 23

Congress Vetoes Used Car Rule 24
A Congressional veto may have taken the final breath out of the controversial FTC regulation.

NAFA's New Car Study 28
Survey reveals new car orders by Government, Law Enforcement and Public Utility groups.

NAFA's Law Enforcement Group Pictorial Report .. 32,33,34

Hotline 38
Joe Alacchi discusses engine oils and how to maintain the health of your engine through proper oil and filter change schedules.

Allen's Alternative Glossary 40
NAFA member Don Allen has a few more definitions of automotive terms that may have missed the dictionary.

200 Million Dollars Keeps Federal Fleet on the Road 40
The United States Government reports their 1981 operating expense for the Federal fleet.

GM Vehicles with Plugged Converters Should be Checked 42
AAA advises your drivers to be on the lookout for faulty catalytic converters and take them to your local dealer for servicing at the first signs of trouble.

Wholesaler/Broker Directory 43

Directory of Auto Auctions 44

Directory of Fleet Car Dealers .. 46

FHWA Reports on Operating Expenses:

Compacts Cost 3¢ a Mile Less than Large Cars

Operating expenses — fuel, oil, repairs and maintenance, and tire replacement — for a 1981 model-year compact car, driven 40,700 miles, would be .0828 cents per mile, according to the most recent report from the Federal Highway Administration.

In contrast, the operating expenses for a large (formerly called standard-size) car would be .1119 cents a mile. For an intermediate car the expenses would be .1028 cents a mile, while for a sub-compact, the operation expenses would amount to .0625 cents a mile.

These figures were extracted from the "Cost of Owning and Operating Automobiles and Vans 1982," published by the Office of Highway Planning, Highway Statistics Division, Federal Highway Administration.

The government study is based on an anticipated car life of 12 years and 120,000 miles of driving, with the number of miles driven declining each year. The government's starting point is 14,500 miles for the first year, 13,700 miles during the second year, and 12,500 miles in the third year.

Five American made vehicles were used in the study: a large four-door sedan; an intermediate four-door sedan; a compact car; a sub-compact car, and a 12-passenger van.

The large car, weighing more than 3,500 pounds, is equipped with a V-8 engine, automatic transmission, power steering and brakes, and air conditioning, costs $9,232.

The intermediate car, weighing between 3,000 and 3,500 pounds, is equipped with a 6-cylinder engine, automatic transmission, power steering and brakes, and air conditioning, and costs $7,449.

The compact car weighs between 2,500 and 3,000 pounds and is powered by a 4-cylinder engine equipped with automatic transmission, power brakes, and air conditioning. It costs $7,111.

The sub-compact vehicle is a five-door hatchback weighing less than 2,500 pounds. It is equipped with a 4-cylinder engine, and standard equipment. Its cost is $5,625.

The federal report, intended for the general public, carefully makes a point that every fleet administrator lives with every day: "Most owners think of costs only in terms of outlays for gasoline, oil, tires, and tolls. A more careful examination shows that some costs occur whether or not the vehicle is driven, while others are directly related to the amount of travel. The travel-related group is generally referred to as operating costs and the other group as ownership costs.

Ownership Costs

Ownership costs include depreciation, insurance, registration and titling fees, scheduled maintenance and any taxes applied to these items. No matter how infrequently a vehicle is driven, some portion of these items is incurred.

"Depreciation is the loss in value of the vehicle during its lifetime due to passage of time, its mechanical and physical condition, and the number of miles it is driven . . .

"Depreciation is the single greatest cost of owning and operating most passenger vehicles during a 12-year life span. The cost of gasoline, however, is overtaking depreciation and exceeds depreciation cost for the intermediate-size vehicle studied. In the majority of cases, the age of the vehicle is the most important factor in determining resale or trade-in value. Such factors as mileage, brand popularity, body style, size and color are also considered."

Operating costs, according to the report, "include repairs and maintenance, gasoline, oil, tires, parking, tolls, and the taxes applied to these items."

The operating expenses computed by the Federal Highway Administration are based on these projected miles per gallon fuel efficiencies: large cars — 17; intermediate cars — 19; compact cars — 24; sub-compact — 28; and van — 14 miles per gallon.

A major difference between the two studies is the estimated miles per gallon for each category. The NAFA figures were: large cars — 13.8; intermediate — 17.3; compacts — 18.6; and sub-compacts — 22.9.

It is interesting to note that by projecting the government's estimated operating expenses for a three-year period, or driving 40,700 miles, brings them very close to the operating expenses reported by NAFA members in the 1981 operating expense study conducted by the Association:

Operating Expenses

Car Size	NAFA	FHWA
Large Car	.1213	.1119
Intermediate	.0973	.1028
Compact	.0911	.0828
Sub-Compact	.0818	.0625

One section of the report deals with reimbursement for business use of a personally owned car. It states: "Employers commonly reimburse the costs for the use of an employee's personal car for business purposes. If a personally owned automobile is used only occasionally for business purposes, an amount necessary to cover out-of-pocket costs, tire wear, and general wear on the vehicle is usually considered sufficient.

"If the extent or type of use affects the insurance rate, or if it subjects the automobile to unusual loads and operating conditions, the reimbursements should be adjusted upward accordingly. Tolls and parking costs incurred in the course of such use should be paid separately and in full, regardless of per-mile reimbursement. If an employee's job is dependent on obtaining and using a personal vehicle on the employer's behalf, reimbursement on the basis of the employee's overall costs seems appropriate."

Table 1
Estimated Cost of Owning and Operating A Large-Size 1981 Model Automobile (Total Costs in Dollars, Costs Per Mile in Cents)

Item	First Year (14,500 Miles)		Second Year (13,700 Miles)		Third Year (12,500 Miles)	
	Total Cost	Cost Per Mile	Total Cost	Cost Per Mile	Total Cost	Cost Per Mile
Cost Excluding Taxes						
Depreciation	2,457.00	16.94	1,421.00	10.37	1,200.00	9.60
Scheduled Maintenance	(98.85)	(.68)	(194.95)	(1.42)	(287.46)	(2.30)
Nonscheduled Repairs and Maintenance	(66.75)	(.46)	(117.55)	(.86)	(430.44)	(3.44)
Total Repairs and Maintenance	165.60	1.14	312.50	2.28	717.90	5.74
Replacement Tires	21.01	.14	19.80	.14	29.34	.23
Accessories	11.89	.08	11.37	.08	10.65	.09
Gasoline	1,039.69	7.17	982.39	7.17	896.33	7.17
Oil	11.25	.08	20.25	.15	20.25	.16
Insurance	461.00	3.18	445.00	3.25	445.00	3.56
Parking and Tolls	113.68	.78	107.10	.78	97.71	.78
Total	4,281.12	29.51	3,319.41	24.22	3,417.18	27.33
Taxes and Fees						
State						
Gasoline	76.76	.53	72.53	.53	66.18	.53
Registration	20.00	.14	20.00	.15	20.00	.16
Titling	461.60	3.18	—	—	—	—
Operating Cost Sales Tax 2/	(.09)	—	(.72)	(.01)	(10.33)	(.08)
Nonoperating Cost Sales Tax	(.90)	(.01)	(2.29)	(.02)	(2.78)	(.02)
Total Sales Tax	.99	.01	3.01	.03	13.11	.10
Subtotal	559.35	3.86	95.54	.71	99.29	.79
Federal						
Gasoline	34.12	.24	32.24	.24	29.41	.24
Oil 2/	.08	—	.14	—	.14	—
Tires	4.83	.03	4.57	.03	4.13	.03
Subtotal	39.03	.27	36.95	.27	33.68	.27
Total Taxes	598.38	4.13	132.49	.98	132.97	1.06
Operating Costs	3,511.24	24.21	2,094.61	15.29	1,965.89	15.72
Ownership Costs	1,368.26	9.43	1,357.29	9.91	1,584.26	12.67
Total of All Costs	4,879.50	33.64	3,451.90	25.20	3,550.15	28.39

2/ Where costs per mile are less than .005 cents, a dash (—) appears in the column.

Table 2
Estimated Cost of Owning and Operating An Intermediate-Size 1981 Model Automobile (Total Costs in Dollars, Costs Per Mile in Cents)

Item	First Year (14,500 Miles)		Second Year (13,700 Miles)		Third Year (12,500 Miles)	
	Total Cost	Cost Per Mile	Total Cost	Cost Per Mile	Total Cost	Cost Per Mile
Cost Excluding Taxes						
Depreciation	1,849.00	12.75	1,050.00	7.66	915.00	7.32
Scheduled Maintenance	(102.85)	(.71)	(193.20)	(1.41)	(286.58)	(2.29)
Nonscheduled Repairs and Maintenance	(66.75)	(.46)	(115.55)	(.84)	(438.69)	(3.51)
Total Repairs and Maintenance	169.60	1.17	308.75	2.25	725.27	5.80
Replacement Tires	14.02	.10	13.21	.10	12.05	.10
Accessories	12.11	.08	11.59	.08	10.84	.09
Gasoline	930.34	6.42	879.02	6.42	801.98	6.42
Oil	11.25	.08	20.25	.15	20.25	.16
Insurance	461.00	3.18	445.00	3.25	445.00	3.56
Parking and Tolls	113.68	.78	107.10	.78	97.71	.78
Total	3,561.00	24.56	2,834.92	20.69	3,028.10	24.23
Taxes and Fees						
State						
Gasoline	68.69	.47	64.90	.47	59.21	.47
Registration	20.00	.14	20.00	.15	20.00	.16
Titling	372.45	2.57	—	—	—	—
Operating Cost Sales Tax 2/	(.09)	—	(.72)	(.01)	(10.75)	(.09)
Nonoperating Cost Sales Tax	(.92)	(.01)	(2.01)	(.01)	(2.55)	(.02)
Total Sales Tax	1.01	.01	2.73	.02	13.30	.11
Subtotal	462.15	3.19	87.63	.64	92.51	.74
Federal						
Gasoline	30.53	.21	28.84	.21	26.32	.21
Oil 2/	.08	—	.14	—	.14	—
Tires	3.25	.02	3.06	.02	2.81	.02
Subtotal	33.86	.23	32.04	.23	29.27	.23
Total Taxes	496.01	3.42	119.67	.87	121.78	.97
Operating Costs	1,238.68	8.54	1,232.79	9.00	1,469.91	11.76
Ownership Costs	2,818.33	19.44	1,721.80	12.56	1,679.97	13.44
Total of All Costs	4,057.01	27.98	2,954.59	21.56	3,149.88	25.20

Table 3
Estimated Cost of Owning and Operating A Compact-Size 1981 Model Automobile (Total Costs in Dollars, Costs Per Mile in Cents)

Item	First Year (14.500 Miles)		Second Year (13.700 Miles)		Third Year (12.500 Miles)	
	Total Cost	Cost Per Mile	Total Cost	Cost Per Mile	Total Cost	Cost Per Mile
Cost Excluding Taxes						
Depreciation	1 206.00	8.32	984.00	7.18	730.00	5.84
Scheduled Maintenance	(66.10)	(.46)	(172.70)	(1.26)	(208.60)	(1.67)
Nonscheduled Repairs and Maintenance	(67.00)	(.46)	(117.80)	(.86)	(360.87)	(2.89)
Total Repairs and Maintenance	133.10	.92	289.90	2.12	569.47	4.56
Replacement Tires	13.85	.10	13.05	.10	11.91	.10
Accessories	14.44	.10	13.78	.10	12.84	.10
Gasoline	736.52	5.08	695.81	5.08	634.86	5.08
Oil	11.25	.08	20.25	.15	20.25	.16
Insurance	461.00	3.18	445.00	3.25	445.00	3.56
Parking and Tolls	113.68	.78	107.10	.78	97.71	.78
Total	2 689.84	18.56	2 568.89	18.76	2 522.04	20.18
Taxes and Fees						
State						
Gasoline	54.38	.38	51.37	.37	46.87	.37
Registration	20.00	.14	20.00	.15	20.00	.16
Titling	355.55	2.45	—	—	—	—
Operating Cost Sales Tax 2/	(.10)	—	(.73)	(.01)	(6.25)	(.05)
Nonoperating Cost Sales Tax	(1.00)	(.01)	(1.27)	(.01)	(2.32)	(.02)
Total Sales Tax	1.10	.01	2.00	.02	8.57	.07
Subtotal	431.03	2.98	73.37	.54	75.44	.60
Federal						
Gasoline	24.17	.17	22.83	.17	20.83	.17
Oil 2/	.08	—	.14	—	.14	—
Tires	2.99	.02	2.83	.02	2.57	.02
Subtotal	27.24	.19	25.80	.19	23.54	.19
Total Taxes	458.27	3.17	99.17	.73	98.98	.79
Operating Costs	1 024.02	7.07	1 031.91	7.54	1 202.26	9.62
Ownership Costs	2 124.09	14.66	1 636.15	11.95	1 418.76	11.35
Total of All Costs	3 148.11	21.73	2 668.06	19.49	2 621.02	20.97

> *"Most owners think of costs only in terms of outlays for gasoline, oil, tires, and tolls. A more careful examination shows that some costs occur whether or not the vehicle is driven, while others are directly related to the amount of travel."*

> *"Depreciation is the single greatest cost of owning and operating most passenger vehicles during a 12-year life span. The cost of gasoline, however, is overtaking depreciation and exceeds depreciation cost for the intermediate-size vehicle studied."*

Table 4
Estimated Cost of Owning and Operating A Subcompact-Size 1981 Model Automobile (Total Costs in Dollars, Costs Per Mile in Cents)

Item	First Year (14.500 Miles)		Second Year (13.700 Miles)		Third Year (12.500 Miles)	
	Total Cost	Cost Per Mile	Total Cost	Cost Per Mile	Total Cost	Cost Per Mile
Cost Excluding Taxes						
Depreciation	956.00	6.59	776.00	5.66	580.00	4.64
Scheduled Maintenance	(96.85)	(.67)	(177.85)	(1.30)	(205.53)	(1.64)
Nonscheduled Repairs and Maintenance	(67.00)	(.46)	(113.80)	(.83)	(304.98)	(2.44)
Total Repairs and Maintenance	163.85	1.13	291.65	2.13	510.51	4.08
Replacement Tires	12.40	.09	11.68	.09	10.65	.09
Accessories	14.96	.10	14.27	.10	13.29	.11
Gasoline	631.32	4.35	596.46	4.35	544.16	4.35
Oil	9.00	.06	18.00	.13	18.00	.14
Insurance	415.00	2.86	401.00	2.93	401.00	3.21
Parking and Tolls	113.68	.78	107.10	.78	97.71	.78
Total	2 316.21	15.96	2 216.16	16.17	2 175.32	17.40
Taxes and Fees						
State						
Gasoline	46.61	.32	44.04	.32	40.18	.32
Registration	20.00	.14	20.00	.15	20.00	.16
Titling	281.25	1.94	—	—	—	—
Operating Cost Sales Tax 2/	(.10)	—	(.53)	—	(6.98)	(.06)
Nonoperating Cost Sales Tax	(1.06)	(.01)	(1.67)	(.01)	(1.66)	(.01)
Total Sales Tax	1.16	.01	2.20	.01	8.64	.07
Subtotal	349.02	2.41	66.24	.48	68.82	.55
Federal						
Gasoline	20.72	.14	19.57	.14	17.86	.14
Oil 2/	.06	—	.12	—	.12	—
Tires	2.33	.02	2.20	.02	2.00	.02
Subtotal	23.11	.16	21.89	.16	19.98	.16
Total Taxes	372.13	2.57	88.13	.64	88.80	.71
Operating Costs	933.22	6.22	913.50	6.66	1 042.64	8.34
Ownership Costs	1 785.12	12.31	1 390.79	10.15	1 221.48	9.77
Total of All Costs	2 688.34	18.53	2 304.29	16.81	2 264.12	18.11

Table 5
Estimated Cost of Owning and Operating A 1981 Model Passenger Van
(Total Costs in Dollars, Costs Per Mile in Cents)

Item	First Year (14,500 Miles)		Second Year (13,700 Miles)		Third Year (12,500 Miles)	
	Total Cost	Cost Per Mile	Total Cost	Cost Per Mile	Total Cost	Cost Per Mile
Cost Excluding Taxes						
Depreciation	3,983.00	27.47	1,846.00	13.47	1,361.00	10.89
Scheduled Maintenance	(96.85)	(.67)	(177.85)	(1.30)	(205.53)	(1.64)
Nonscheduled Repairs and Maintenance	(67.50)	(.47)	(161.53)	(1.18)	(626.81)	(5.01)
Total Repairs and Maintenance	164.35	1.14	339.38	2.48	832.34	6.65
Replacement Tires	15.12	.10	14.24	.10	59.72	.48
Accessories	18.09	.12	17.28	.13	16.13	.13
Gasoline	1,262.52	8.71	1,192.91	8.71	1,088.45	8.71
Oil	13.50	.09	24.75	.18	24.75	.20
Insurance	585.00	4.03	567.00	4.14	567.00	4.54
Parking and Tolls	113.68	.78	107.10	.78	97.71	.78
Total	6,155.26	42.44	4,108.66	29.99	4,047.10	32.38
Taxes and Fees						
State						
Gasoline	93.21	.64	88.07	.64	80.36	.64
Registration	30.00	.21	30.00	.22	30.00	.24
Titling	643.85	4.44	—	—	—	—
Operating Cost Sales Tax 2/	(.13)	—	(1.65)	(.01)	(16.69)	(.13)
Nonoperating Cost Sales Tax	(1.21)	(.01)	(1.82)	(.01)	(1.81)	(.01)
Total Sales Tax	1.34	.01	3.47	.02	18.50	.14
Subtotal	768.40	5.30	121.54	.88	128.86	1.02
Federal						
Gasoline	41.43	.29	39.14	.29	35.72	.29
Oil 2/	.09	—	.17	—	.17	—
Tires	6.53	.05	6.18	.05	5.63	.05
Subtotal	48.05	.34	45.49	.34	41.52	.34
Total Taxes	816.45	5.64	167.03	1.22	170.38	1.36
Operating Costs	1,613.71	11.13	1,635.74	11.94	2,036.01	16.29
Ownership Costs	5,358.00	36.95	2,639.95	19.27	2,181.47	17.45
Total of All Costs	6,971.71	48.08	4,275.69	31.21	4,217.48	33.74

> *"Employers commonly reimburse the costs for the use of an employee's personal car for business purposes. If a personally owned automobile is used only occasionally for business purposes, an amount necessary to cover out-of-pocket costs, tire wear, and general wear on the vehicle is usually considered sufficient."*

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Leasing Co. Recommendations

(Continued from page 14)

Large Cars

As we move into the mid-eighties, the very words "large cars" begin to take on a new meaning. Last year's mid-size becomes next year's full-size. We recognize that there will always be usage considerations that justify a truly large car. These considerations boil down to rugged use and sheer volume requirements.

At one time, the additional up-front cost associated with diesel engines in this size car was offset by lower fuel costs and no resale penalty. Now that the fuel situation has changed, there is a resale penalty being assessed on full-size diesels versus full-size, gas-powered cars. Therefore, we are not recommending the diesel versions of these cars for 1983.

If you must order larger cars, PH&H recommends the following:

Buick LeSabre Custom	4-door	231 V-6 Gas
Chevrolet Impala	4-door	231 V-6 Gas
Oldsmobile Delta '88	4-door	231 V-6 Gas

●

USFL Recommendations

United States Fleet Leasing recommends mid-size sedans for most business fleets. They are simultaneously roomy and economical, and offer relatively low

(Continued on page 36)

NAFA
Bulletin
The Magazine for Fleet Administrators
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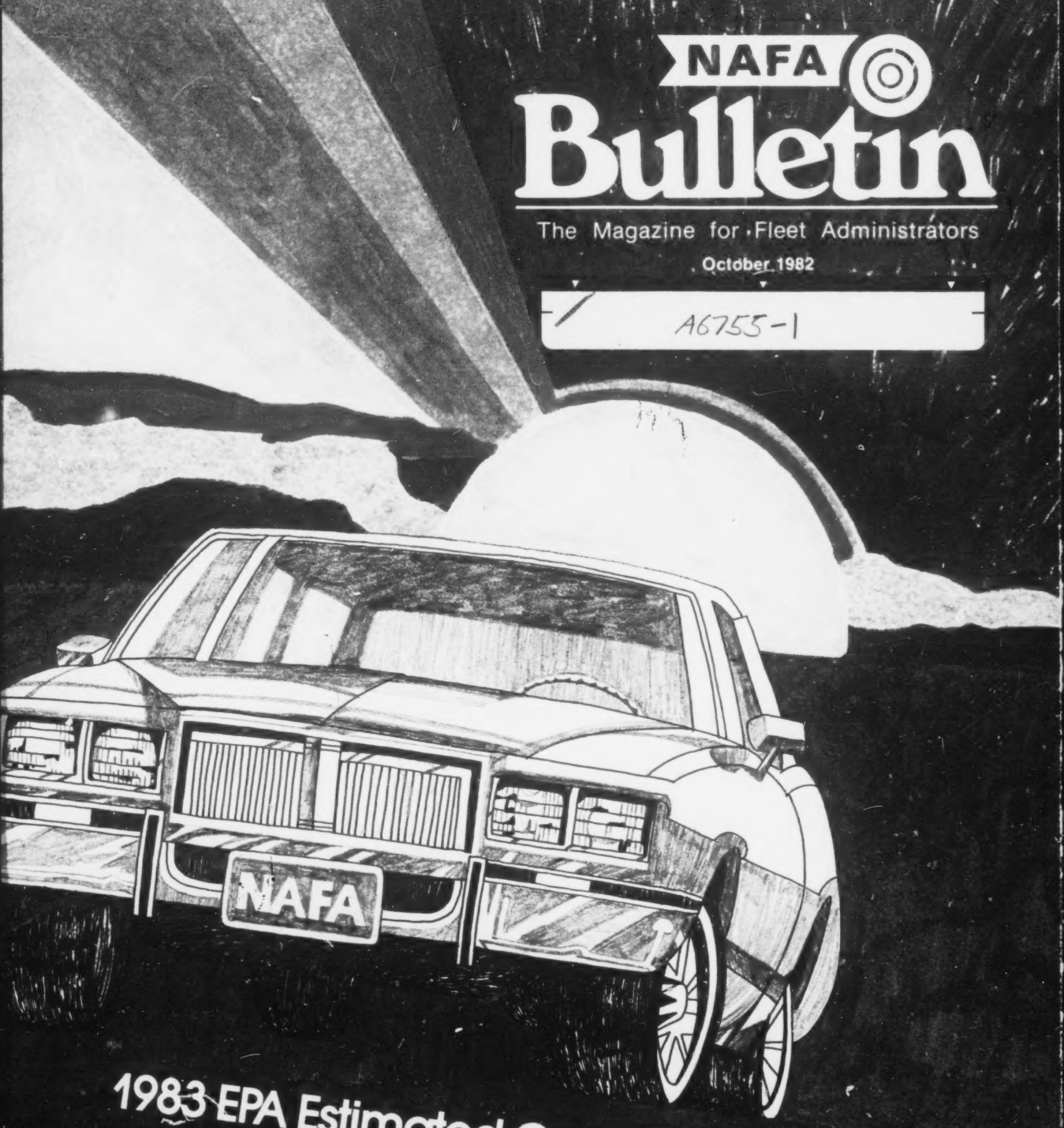

1983 EPA Estimated Gas Mileage Figures

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news highlights

New NAFA Program Focusses on the Hows and Whys of Today's Automobiles

For the first time in its history, NAFA is launching two 4½ day intensive, thorough courses on the operation of key automobile components systems. These technically substantial programs are scheduled to take place on November 1-5 in New Jersey and November 29 through December 3 in Texas. The program was developed by NAFA's Maintenance Committee Chairman Pat Mourges and NAFA's Technical Consultant Joe Alacchi in cooperation with NAFA's Educational Committee Chairman Peter Greohrs.

According to Mourges, the purpose of the course is to help provide fleet managers with the much-needed understanding of the ways in which the various components of today's complex automobile work. The program will provide a practical guide to the minor maintenance and periodic inspections of the key components that will insure the performance of the vehicles entrusted to the fleet manager.

The instructor for the course is Joe Alacchi. He will combine lectures, demonstrations, and audio-visual learning aids to achieve a comprehensive understanding of basic principles in motor vehicle operations. "All lecturers will be reinforced by direct hands-on experience, using the latest equipment and techniques," claims Alacchi. He will focus on:

- **What it is**
- **Why its there**
- **How it works, and**
- **How to keep it working**

In order to insure each student with the benefits of concentrated instruction and individual participation, enrollment in each class is limited to 15. The fee for the workshops in New Jersey and Texas is, respectively, $495 and $445. (For Texas, the fee is lower because the cost of meals is included in the room rate.) In addition to breakfast and lunch for each day, the fee includes a comprehensive workbook, extensive handouts, and a textbook on automobile operations and maintenance. At the end of the course, you will receive a handsome certificate showing that you have successfully completed the nine-session course.

This new program will be offered in these two cities:

November 1-5
Sheraton Newark Airport
Elizabeth, New Jersey

November 29-December 3
American Airlines Learning Center
Fort Worth, Texas

Don't miss this opportunity to fill in your gaps in technical know-how. In one week, this course will provide you with the knowledge that could take other fleet managers years to acquire.

For further information, write to NAFA, 295 Madison Ave., New York, NY 10017 or call (212) 689-3200.

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in this issue

OCTOBER 1982

News Highlights 5
NAFA announces new program on the basic principles of operating today's motor vehicle

Manufacturers Reveal 1983 Police Car Line-up 7

Gaseous Fuels are Effective For City Police and Administrative Use 14
Ford's fuel expert Roberta Nichols discusses the use of alternate fuels for police vehicles

Wichita's Propane Fleet Saves City $90,000 16
David Stowe with the City of Wichita describes the propane conversion program and the city's decision for choosing propane

You Must Program the Machine To Do What You Want It To Do .. 18
Thomas J. Timbario of Mueller Associates tells fleet managers what steps they should take to develop an effective computer program

The Diesel Spectrum 24
Al Pribish with Michigan Career Institute explains what the various diesel fuels are and their applications for police vehicles

Can We Keep 55 Alive? 28
Transportation and highway safety authorities fear that highway accident fatalities will escalate as drivers violate the 55 mph limit

Chevron's Energy Forecast? 30
The Economics Department of The Standard Oil Company of California reveals its forecast for energy supplies

Maintenance 32
Vale reports on how to reduce the cost to repair front end damages on front wheel drive cars

1982 Tax Bill Repeals 'Safe Harbor' Leasing 36

Wholesaler/Broker Directory 37

Directory of Auto Auctions 38

Directory of Fleet Car Dealers .. 40

EPA's 1983 Estimated Gas Mileage Figures

The following mileage ratings, provided by the Environmental Protection Agency, include all vehicles sold in the United States except California.

The mileage ratings represent city driving figures. The Agency cautions that the number should be used for comparison only since a driver's actual mileage could vary widely from the estimate.

In certain cases, apparently identical listings will show different mileage ratings. This occurs because of some factor that is not shown on this table, such as different types of carburetors. The "D" under the transmission column represents diesel engines.

EPA Car Categories

Mini-Compact — Less than 85 cubic feet of passenger and luggage volume.

Sub-Compact — Between 85 to 100 cubic feet of passenger and luggage volume.

Compact — Between 100 to 110 cubic feet of passenger and luggage volume.

Mid-Size — Between 110 to 120 cubic feet of passenger and luggage volume.

Large — More than 120 cubic feet of passenger and luggage volume.

MPG	Make	Transmission	CID	Cyl.
	Two-Seaters			
23	Alfa R Spdr 2000 Vel	M5	120	4
21	Datsun 280ZX	M5	168	6
19	Datsun 280ZX	M5	168	6
19	Datsun 280ZX	A3	168	6
11	Ferrari 308	M5	179	8
25	Fiat Spdr 2000	M5	122	4
22	Fiat Spdr 2000	A3	122	4
26	Fiat X1-9	M5	91	4
29	Ford EXP	M4	98	4
27	Ford EXP	A3	98	4
29	Linc-Merc LN-7	M4	98	4
27	Linc-Merc LN-7	A3	98	4
20	Mazda RX-7 (Rotary)	M5	70	2
19	Mazda RX-7 (Rotary)	A3	70	2
18	Mercedes Benz 380SL	A4	234	8
	Mini-Compact Cars			
22	Alfa R GTV	M5	152	6
11	Ferrari Mondial	M5	179	8
39	Honda Civic	M4	81	4
46	Honda Civic	M5	81	4
35	Honda Civic	M5	91	4
31	Honda Civic	A3	91	4
16	Porsche 911	M5	183	6
22	Porsche 944	M5	151	4
21	Porsche 944	A3	151	4
33	Renault LeCar	M4	85	4
42	Toyota Starlet	M4	79	4
44	Toyota Starlet	M5	79	4
29	VW Rabbit Cnv	M5	105	4
25	VW Rabbit Cnv	A3	105	4
	Sub-Compact Cars			
21	AMC Spirit	M4	258	6
21	AMC Spirit	M5	258	6
21	AMC Spirit	A3	258	6
17	Audi Quattro	M5	131	5
39	Audi 4000 Coupe	D-M5	97	4
38	Audi 4000 Coupe	D-M5	97	4
34	Audi 4000 Coupe	D-A3	97	4
31	Audi 4000 Coupe	M5	105	4
24	Audi 4000 Coupe	A3	105	4
24	Audi 4000 Coupe	M5	131	5
20	Audi 4000 Coupe	A3	131	5
25	BMW 320i	M5	108	4
27	BMW 320i	A3	108	4
19	BMW 633CSI	M5	196	6
18	BMW 633CSI	A3	196	6
24	Chevy Camaro	M5	151	4
26	Chevy Camaro	M5	151	4
23	Chevy Camaro	A3	151	4
16	Chevy Camaro	A4	205	8
31	Chevy Chevette	M5	98	4
28	Chevy Chevette	A3	98	4
42	Chevy Chevette	D-M5	111	4
37	Chevy Chevette	D-A3	111	4
27	Chrysler Lebaron Cnv	A3	135	4
22	Chrysler Lebaron Cnv	A3	156	4
40	Datsun Nissan Sentra	M4	91	4
35	Datsun Nissan Sentra	M4	98	4
35	Datsun Nissan Sentra	M5	98	4
31	Datsun Nissan Sentra	A3	98	4
48	Dats Nissan Sentra	D-M4	103	4
44	Dats Nissan Sentra	D-M5	103	4
40	Dats Nissan Sentra	D-A3	103	4
35	Datsun Pulsar	M5	98	4
31	Datsun Pulsar	A3	98	4
27	Datsun 200SX	M5	133	4
25	Datsun 200SX	A3	133	4
20	Datsun 280ZX2x2	M5	168	6
19	Datsun 280ZX2x2	M5	168	6
19	Datsun 280ZX2x2	A3	168	6
18	Datsun 280ZX2x2	A3	168	6
23	Datsun 810	M5	146	6
23	Datsun 810	A4	146	6
30	Datsun 810	D-M5	170	6
28	Datsun 810	D-A4	170	6
24	Dodge Challenger	M5	156	4
23	Dodge Challenger	A3	156	4
34	Dodge Charger	M4	97	4
32	Dodge Charger	M4	105	4
29	Dodge Charger	M4	135	4
28	Dodge Charger	M5	135	4
27	Dodge Charger	A3	135	4
39	Dodge Colt	M4	86	4
35	Dodge Colt	M4	86	4
32	Dodge Colt	M4	98	4
30	Dodge Colt	A3	98	4
27	Dodge 400 Cnv	A3	135	4
22	Dodge 400 Cnv	A3	156	4
26	Ford Mustang	M4	140	4
22	Ford Mustang	M5	140	4
21	Ford Mustang	A3	140	4
20	Ford Mustang	A3	231	6
32	Honda Accord	M5	107	4
29	Honda Accord	A4	107	4
26	Isuzu I-Mark	A3	111	4
44	Isuzu I-Mark	D-M4	111	4
39	Isuzu I-Mark	D-M5	111	4

MPG	Make	Transmission	CID	Cyl.
34	Isuzu I-Mark	D-A3	111	4
17	Jaguar XJ	A3	258	6
14	Jaguar XJS	A3	326	12
26	Lincoln Mercury Capri	M4	140	4
22	Lincoln Mercury Capri	M5	140	4
21	Lincoln Mercury Capri	A3	140	4
20	Lincoln Mercury Capri	A3	231	6
34	Mazda GLC	M4	91	4
36	Mazda GLC	M5	91	4
31	Mazda GLC	A3	91	4
28	Mazda 626	M5	122	4
27	Mazda 626	A3	122	4
33	Mitsubishi Cordia	M5	110	4
27	Mitsubishi Cordia	A3	110	4
27	Mitsubishi Cordia	M4	110	4
39	Mitsubishi Precis	M4	86	4
35	Mitsubishi Precis	M4	86	4
32	Mitsubishi Precis	M4	98	4
30	Mitsubishi Precis	A3	98	4
24	Mitsubishi Sapporo	M5	156	4
23	Mitsubishi Sapporo	A3	156	4
22	Mitsubishi Starion	M5	156	4
33	Mitsubishi Tredia	M5	110	4
27	Mitsubishi Tredia	M4	110	4
27	Mitsubishi Tredia	A3	110	4
39	Plymouth Colt	M4	86	4
35	Plymouth Colt	M4	86	4
32	Plymouth Colt	M4	98	4
30	Plymouth Colt	A3	98	4
24	Plymouth Sapporo	M5	156	4
23	Plymouth Sapporo	A3	156	4
34	Plymouth Turismo	M4	97	4
32	Plymouth Turismo	M4	105	4
29	Plymouth Turismo	M4	135	4
28	Plymouth Turismo	M5	135	4
28	Plymouth Turismo	A3	135	4
24	Pontiac Firebird	M5	151	4
26	Pontiac Firebird	M5	151	4
23	Pontiac Firebird	A3	151	4
16	Pontiac Firebird	A4	305	8
31	Pontiac 1000	M5	98	4
28	Pontiac 1000	A3	98	4
42	Pontiac 1000	D-M5	111	4
37	Pontiac 1000	D-A3	111	4
26	Renault Fuego	M5	95	4
27	Renault Fuego	M5	100	4
24	Renault Fuego	A3	100	4
27	Renault 18i Sedan	M5	100	4
24	Renault 18i Sedan	A3	100	4
9	Rolls Royce Corniche	A3	412	8
32	Subaru	M4	97	4
32	Subaru	M5	97	4
31	Subaru	M5	109	4
27	Subaru	A3	109	4
25	Toyota Celica	M5	144	4
26	Toyota Celica	M5	144	4
26	Toyota Celica	A4	144	4
21	Toyota Celica Supra	M5	168	6
22	Toyota Celica Supra	A4	168	6
36	Toyota Corolla	M4	97	4
33	Toyota Corolla	M5	97	4
31	Toyota Corolla	A3	97	4
32	Toyota Corolla	A4	97	4
39	Toyota Tercel	M4	89	4
34	Toyota Tercel	M5	89	4
32	Toyota Tercel	A3	89	4
21	Toyota Cressida	M5	168	6
22	Toyota Cressida	A4	168	6
42	Volkswagen Jetta	D-M5	97	4
37	Volkswagen Jetta	D-A3	97	4
30	Volkswagen Jetta	M5	105	4
43	VW Jetta Turbo	D-M5	97	4
25	Volkswagen Jetta	A3	105	4
36	VW Jetta Turbo	D-A3	97	4

Actual Real World Mileage

The range of gas mileage is:

	Model Year 1981	Model Year 1982
4 cyl.	18.94-26.18	20.09-28.61
6 cyl.	18.05-22.26	17.60-23.11
8 cyl.	*	*

Source: Peterson, Howell & Heather, Inc.

* Because of the shift to 4- and 6-cylinder engine vehicles, there are not enough data for reliable figures for the 8-cylinder engines.

MPG	Make	Transmission	CID	Cyl.
48	Volkswagen Rabbit	D-M4	97	4
43	Volkswagen Rabbit	D-M5	97	4
35	Volkswagen Rabbit	D-A3	97	4
32	Volkswagen Rabbit	M4	105	4
31	Volkswagen Rabbit	M4	105	4
30	Volkswagen Rabbit	M5	105	4
27	Volkswagen Rabbit	A3	105	4
50	VW Rabbit (Semi)	A	97	4
43	VW Rabbit (Turbo)	M5	97	4
26	Volkswagen Rabbit	M5	100	4
36	VW Rabbit (Turbo)	D-A3	97	4
29	Volkswagen Scirocco	M5	105	4
25	Volkswagen Scirocco	A3	105	4
	Compact Cars			
21	AMC Concord	M4	258	6
21	AMC Concord	M5	258	6
21	AMC Concord	A3	258	6
22	Audi 5000	M5	131	5
22	Audi 5000	M5	131	5
18	Audi 5000 Turbo	A3	131	5
19	Audi 5000	A3	131	5
19	Audi 5000	A3	131	5
28	Audi D Turbo	A3	121	5
19	BMW 733I	M5	196	6
18	BMW 733I	A3	196	6
22	BMW 533I	M5	164	6
20	BMW 533I	A3	164	4
19	BMW 533I	M5	196	6
18	BMW 533I	A3	196	6
17	Buick Riviera Conv	A4	252	6
16	Buick Riviera Conv	A4	307	8
28	Buick Skyhawk	M5	110	4
28	Buick Skyhawk	A3	110	4
25	Buick Skyhawk	A3	121	4
27	Buick Skylark	M4	151	4
24	Buick Skylark	A3	151	4
22	Buick Skylark	A3	173	6
22	Buick Skylark	M4	173	6
21	Buick Skylark	M4	173	6
23	Cadillac Cimarron	A3	121	4
23	Cadillac Cimarron	M5	121	4
25	Chevy Cavalier	A3	121	4
25	Chevy Cavalier	M5	121	4
31	Datsun Nissan Stanza	M5	120	4

(Continued on page 10)

MPG	Make	Trans-mission	CID	Cyl.
27	Datsun Nissan Stanza	A3	120	4
32	Dodge Omni	M4	105	4
29	Dodge Omni	M4	135	4
29	Dodge Omni	A3	135	4
34	Dodge Omni	M4	97	4
28	Dodge Omni	M5	135	4
33	Ford Escort	M4	98	4
27	Ford Escort	M3	98	4
21	Thunderbird	A3	231	6
21	Merc Cougar	A3	231	6
33	Linc-Merc Lynx	M4	98	4
27	Linc-Merc Lynx	A3	98	4
28	Mer Benz 240	D-M4	147	4
27	Mer Benz 240	D-A4	147	4
27	Mer Benz 240 (Turbo)	D-A4	183	5
27	Mer Benz 300SD (Turbo)	D-A4	183	5
18	Mer Benz 380SEC	A4	234	8
25	Olds Firenza	A3	121	4
25	Olds Firenza	M5	121	4
27	Olds Omega	M4	151	4
24	Olds Omega	A3	151	4
22	Olds Omega	M4	173	6
21	Olds Omega	M4	173	6
22	Olds Omega	A3	173	6
27	Peugeot 505	D-M4	141	4
28	Peugeot 505 Turbo	D-M5	141	4
26	Peugeot 505	D-A3	141	4
26	Peugeot 505 Turbo	D-A3	141	4
22	Peugeot 505	M5	120	4
21	Peugeot 505	A3	120	4
28	Peugeot 604 Turbo	D-M5	141	4
26	Peugeot 604 Turbo	D-A3	141	4
34	Plymouth Horizon	M4	97	4
32	Plymouth Horizon	M4	105	4
29	Plymouth Horizon	M4	135	4
29	Plymouth Horizon	A3	135	4
28	Plymouth Horizon	M5	135	4
31	Pontiac 2000	M5	110	4
37	Renault Alliance	M4	85	4
34	Renault Alliance	M5	85	4
9	Rolls Royce Camargue	A3	412	8
23	Saab 900	M5	121	4
21	Saab 900 Turbo	M5	121	4
21	Saab 900 Turbo	A3	121	4
22	Saab 900	A3	121	4
29	Volkswagen Quantum	M5	105	4
23	Volkswagen Quantum	A3	105	4
41	VW Quantum (Turbo)	D-M5	97	4
32	VW Quantum (Turbo)	D-A3	97	4
20	Volvo DL-GL-GLT-Turbo	M4	130	4
20	Volvo DL-GL-GLT-Turbo	A4	130	4
25	Volvo DL-GL-GLT-Turbo	M4	141	4
23	Volvo DL-GL-GLT-Turbo	A4	141	4
29	Volvo DL-GL-GLT	D-M4	145	6
27	Volvo DL-GL-GLT	D-A3	145	6

Mid-Size Cars

MPG	Make	Trans-mission	CID	Cyl.
20	Buick Century	A3	181	6
26	Buick Regal	D-A3	263	6
18	Buick Regal Turbo	A4	231	6
23	Buick Regal	D-A3	350	8
21	Buick Riviera	A3	231	6
21	Buick Riviera	D-A4	350	8
16	Buick Riviera Turbo	A4	231	6
17	Buick Riviera	A4	252	6
16	Buick Riviera	A4	307	8
17	Cadillac Eldorado	A4	249	8
21	Cadillac Eldorado	D-A4	350	8
17	Cadillac Seville	A4	249	8
21	Cadillac Seville	D-A4	350	8
22	Chevy Celebrity	A3	173	6
27	Chevy Celebrity	D-A3	263	6
22	Chevy Citation	A3	173	6
21	Chevy Citation	M4	173	6
20	Chevy Malibu	A3	229	6
25	Chevy Malibu	D-A3	263	6
18	Chevy Malibu	A3	305	8
23	Chevy Malibu	D-A3	350	8
20	Chevy Monte Carlo	A3	229	6
25	Chevy Monte Carlo	D-A3	263	6
18	Chevy Monte Carlo	A3	305	8
23	Chrysler Cordoba	D-A3	350	8
18	Chrysler Cordoba	A3	225	6
17	Chrysler LeBaron	A3	318	8
24	Chrysler New Yorker	A3	135	4
22	Chrysler New Yorker	A3	156	4
18	Chrysler Fifth Ave.	A3	225	6
17	Chrysler Fifth Ave	A3	318	8
28	Chrysler E Class	M5	135	4
27	Chrysler E Class	A3	135	4
22	Chrysler E Class	A3	156	4
29	Dodge Aries	M4	135	4
28	Dodge Aries	A3	135	4
24	Dodge Aries	A3	156	4
28	Dodge Aries	M5	135	4
19	Dodge Diplomat	A3	225	6
17	Dodge Diplomat	A3	318	8
19	Dodge Mirada	A3	225	6
17	Dodge Mirada	A3	318	8
28	Dodge 400	M5	135	4
27	Dodge 400	A3	135	4
22	Dodge 400	A3	156	4
23	Dodge 600	M5	135	4
24	Dodge 600	A3	135	4
22	Dodge 600	A3	156	4
26	Ford Fairmont Futura	M4	140	4
21	Ford Fairmont Futura	A3	140	4
19	Ford Fairmont Futura	A3	200	6
26	Ford LTD	M4	140	4
21	Ford LTD	A3	140	4
20	Ford LTD	A3	200	4
16	Imperial	A3	318	8
17	Linc-Merc Continental	A4	302	8
26	Linc-Merc Marquis	M4	140	4
21	Linc-Merc Marquis	A3	140	4
20	Linc-Merc Marquis	A3	200	6
26	Linc-Merc Zephyr	M4	140	4
21	Linc-Merc Zephyr	A3	140	4
19	Linc-Merc Zephyr	A3	200	6
8	Maserati Quattroporte	A3	301	8
18	Mercedes-Benz 380SEL	A4	234	8
24	Olds Cutlass Ciera	A3	151	4
20	Olds Cutlass Ciera	A3	181	6
28	Olds Cutlass Ciera	D-A3	263	6
21	Olds Cutlass Supreme	A3	231	6
25	Olds Cutlass Supreme	D-A3	263	6
18	Olds Cutlass Supreme	A3	307	8
23	Olds Cutlass Supreme	D-A3	350	8
17	Olds Toronado	A4	252	6
16	Olds Toronado	A4	307	8
22	Olds Toronado	A4	350	8
19	Plymouth Gran Fury	A3	225	6
17	Plymouth Gran Fury	A3	318	8
29	Plymouth Reliant	M4	135	4
28	Plymouth Reliant	M5	135	4
28	Plymouth Reliant	A3	135	4
24	Plymouth Reliant	A3	156	4
21	Pontiac Bonneville	A3	231	6
18	Pontiac Bonneville	A3	305	8
23	Pontiac Bonneville	D-A3	350	8
21	Pontiac Grand Prix	A3	231	6
18	Pontiac Grand Prix	A3	305	8
23	Pontiac Grand Prix	D-A3	350	8
27	Pontiac Phoenix	M4	151	4
24	Pontiac Phoenix	A3	151	4
22	Pontiac Phoenix	M4	173	6

(Continued on page 12)

MPG	Make	Trans-mission	CID	Cyl.
22	Pontiac Phoenix	A3	173	6
24	Pontiac 6000	A3	151	4
25	Pontiac 6000	A3	151	4
22	Pontiac 6000	A3	173	6
28	Pontiac 6000	D-A3	263	6
28	Volvo 760 GLE	D-M4	145	6
27	Volvo 760 GLE	D-A3	145	6
20	Volvo 760 GLE	A4	174	6
	Large Cars			
18	Buick Electra	A4	252	6
16	Buick Electra	A4	307	8
22	Buick Electra	D-A4	350	8
19	Buick LeSabre	A3	231	6
19	Buick LeSabre	A3	231	6
19	Buick LeSabre	A3	231	6
18	Buick LeSabre	A4	252	6
17	Buick LeSabre	A3	307	8
17	Buick LeSabre	A4	307	8
21	Buick LeSabre	D-A3	350	8
22	Buick LeSabre	D-A4	350	8
22	Buick LeSabre	D-A4	350	8
22	Cad. De Ville-Br.	D-A4	350	8
19	Chevy Impala-Caprice	A3	229	6
17	Chevy Impala-Caprice	A4	305	8
23	Chevy Impala-Caprice	D-A3	350	8
22	Chevy Impala-Caprice	D-A4	350	8
17	Linc-Merc Gr Marquis	A4	302	8
17	Linc-Mercury Mark VI	A4	302	8
17	Linc-Mercury Town Car	A4	302	8
19	Oldsmobile Delta 88	A3	231	6
17	Oldsmobile Delta 88	A3	307	8
17	Oldsmobile Delta 88	A4	307	8
22	Olds Delta 88	D-A4	350	8
18	Olds Ninety-Eight	A4	252	6
17	Olds Ninety-Eight	A4	307	8
22	Olds Ninety-Eight	D-A4	350	8
	Small Station Wagons			
21	AMC Concord Wagon	M4	258	6
21	AMC Concord Wagon	M5	258	6
21	AMC Concord Wagon	A3	258	6
28	Buick Skyhawk Wagon	M5	110	4
28	Buick Skyhawk Wagon	A3	110	4
23	Buick Skyhawk Wagon	A3	121	4
25	Chevy Cavalier Wagon	M5	121	4
25	Chevy Cavalier Wagon	A3	121	4
35	Datsun Nissan Sentra	M4	98	4
35	Datsun Nissan Sentra	M5	98	4
31	Datsun Nissan Sentra	A3	98	4
42	Datsun Nissan Sentra	D-M5	103	4
38	Datsun Nissan Sentra	D-A3	103	4
23	Datsun 810 Wagon	M5	146	6
22	Datsun 810 Wagon	A4	146	6
30	Datsun 810 Wagon	D-M5	170	6
28	Datsun 810 Wagon	D-A4	170	6
29	Ford Escort Wagon	M4	98	4
27	Ford Escort Wagon	A3	98	4
35	Honda Civic Wagon	M5	91	4
31	Honda Civic Wagon	A3	91	4
29	Linc-Merc Lynx Wagon	M4	98	4
27	Linc-Merc Lynx Wagon	A3	98	4
30	Mazda GLC Wagon	M4	91	4
30	Mazda GLC Wagon	M5	91	4
26	Mazda GLC Wagon	A3	91	4
28	Olds Firenza Cruiser	M5	110	4
28	Olds Firenza Cruiser	A3	110	4
25	Olds Firenza Cruiser	M5	121	4
23	Olds Firenza Cruiser	A3	121	4
28	Pontiac 2000	M5	110	4
28	Pontiac 2000	A3	110	4
27	Renault 18i Wagon	M5	100	4
24	Renault 18i Wagon	A3	100	4
30	Subaru Wagon	M5	109	4
30	Subaru Wagon	M5	109	4
27	Subaru Wagon	A3	109	4
33	Toyota Corolla Wagon	M5	97	4
31	Toyota Corolla Wagon	A3	97	4
22	Toyota Cressida Wagon	A4	168	6
32	Toyota Tercel Wagon	M5	89	4
41	Volks Quantum Wagon	D-M5	97	4
32	Volks Quantum Wagon	D-A3	97	4
29	Volks Quantum Wagon	M5	105	4
23	Volks Quantum Wagon	A3	105	4
	Mid-Size Station Wagons			
21	Buick Regal Est. Wgn.	A3	231	6
23	Buick Regal Est. Wgn.	D-A3	350	8
20	Chevy Malibu Wgn.	A3	229	6
17	Chevy Malibu Wgn.	A3	305	8
23	Chevy Malibu Wgn.	D-A3	350	8
24	Chry Town & Country	A3	135	4
22	Chry Town & Country	A3	156	4
28	Dodge Aries Wgn.	M4	135	4
28	Dodge Aries Wgn.	M5	135	4
27	Dodge Aries Wgn.	A3	135	4
22	Dodge Aries Wgn.	A3	156	4
20	Ford LTD Wgn.	A3	200	6
20	Linc Merc Marq. Wgn.	A3	200	6
27	Mer-Benz 300 TD	D-A4	183	5
21	Olds Cutl Cruis Wgn.	A3	231	6
17	Olds Cutl Cruis Wgn.	A3	307	8
23	Olds Cutl Cruis Wgn.	D-A3	350	8
27	Peugeot 504 Wgn.	D-M4	141	4
26	Peugeot 504 Wgn.	D-A3	141	4
28	Plymouth Reliant Wgn.	M4	135	4
28	Plymouth Reliant Wgn.	M5	135	4
27	Plymouth Reliant Wgn.	A3	135	4
22	Plymouth Reliant	A3	156	4
21	Pontiac Bonnev Wgn.	A3	231	6
17	Pontiac Bonnev Wgn.	A3	305	8
23	Pontiac Bonnev Wgn.	D-A3	350	8
20	Volvo Wagon	M4	130	4
20	Volvo Wagon Turbo	A4	130	4
24	Volvo Wagon	M4	141	4
23	Volvo Wagon	A4	141	4
29	Volvo Wagon	D-M4	145	6
27	Volvo Wagon	D-A3	145	6
	Large Station Wagons			
16	Buick LeSabre-Electra	A4	307	8
21	Buick LeSabre-Electra	D-A3	350	8
22	Buick LeSabre-Electra	D-A4	350	8
16	Chevy Impala-Caprice	A4	305	8
21	Chevy Impala-Caprice	D-A3	350	8
22	Chevy Impala-Caprice	D-A4	350	8
17	Ford LTD	A4	302	8
17	Lincoln Mercury Marq	A4	302	8
16	Olds Custom Cruiser	A4	307	8
22	Olds Custom Cruiser	D-A4	350	8

NAFA Car Categories

Sub-Compact: Wheelbase of less than 100 inches and a curb weight of under 2,300 pounds.

Compact or Small: Wheelbase between 100 and 106 inches and a curb weight of between 2,300 and 2,799 pounds.

Mid-Size: Wheelbase between 106 and 114 inches with a curb weight of between 2,800 and 3,399 pounds.

Large: Wheelbase of more than 114 inches and a curb weight of more than 3,400 pounds.

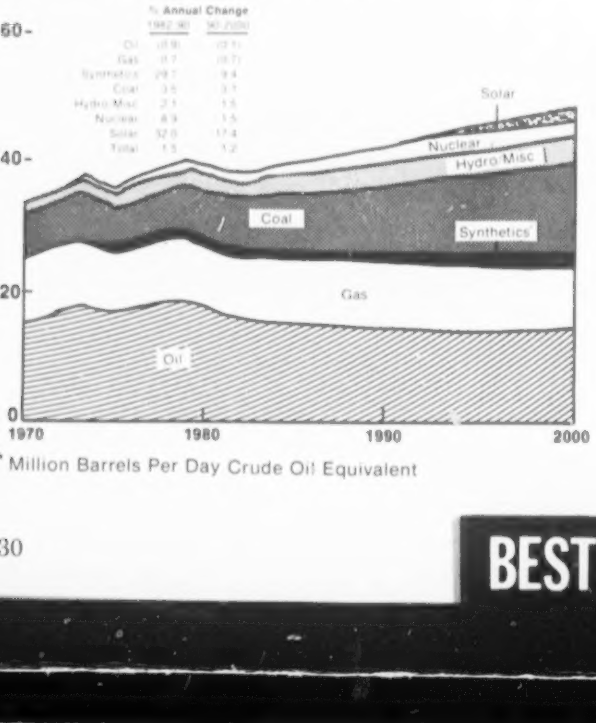
Chevron's Energy Forecast:

Supplies Will Meet Demand

The supply of energy is a major concern, not only to fleet managers but also to all corporations and government agencies in the United States and Canada. While forecasting energy supplies is an inexact science at best, the Economics Department of the Standard Oil Company of California recently published its findings in a publication entitled "World Energy Outlook." This article is based on its forecast.

In the years since 1973 the world energy picture has undergone a series of profound changes. Since 1978, the rate of change accelerated and the following events occurred: a major oil supply disruption followed by an extended period of excess supply, rapid price increases resulting in a conservation response of a magnitude once deemed inconceivable, and a major economic response not entirely unrelated to energy price increases. Oil inventories have jumped from low levels to high levels and back again.

U.S. Energy Consumption M̄ B/D C.O.E.*



* Million Barrels Per Day Crude Oil Equivalent

For the first time, OPEC has exhibited many of the characteristics of a cartel, making large and rapid price increases in times of shortages and supply cuts to support prices in times of surplus.

The future will certainly witness upsets similar to those of the recent past. Periodic but unpredictable events such as political or military actions, economic cycles, and natural disasters will affect world oil supply and demand. If demand grows to approach the physical limts of oil supply, the frequency and severity of these upsets will have a disproportionate impact. Fortunately, the outlook is that the world will not reach the physical limits of oil supply until well into the 21st century.

As recently as 1978, OPEC crude oil production was forecasted to rise significantly in the 1980's and to peak in the 1990's. This production profile was considered feasible based upon generally accepted estimates of the total resource base. In the intervening years, the conservation response to sharply higher prices has resulted in a flattening of this curve.

OPEC crude oil production is now estimated to grow only to about 26 million barrels per day by the year 2000. When compared to the 1978 profile, this new curve defers the production of approximately 150 billion barrels of oil into the next century and postpones the time when world oil supply approaches physical limits. This fundamental change makes this forecast more optimistic about the longs run world oil supply and demand balance.

Decline in free world primary oil consumption began in the wake of the large price increases of 1979 and 1980. It is expected to continue with a 1.7 percent decline in 1982, following a 4.8 percent decrease in 1981. Consumption in 1982 is forecasted at 46 million barrels per day; 6.0 million barrels per day below the 1979 peak.

Price-induced conservation is having a greater affect on consumption than previously appre-

(Continued on page 35)

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Chevron's Energy Forecast

(Continued from page 30)

ciated. Past price increases are still working their way through all oil consuming sectors in the form of more fuel efficient autos, altered driving habits, added home insulation, higher efficiency appliances, and greater industry energy efficiency.

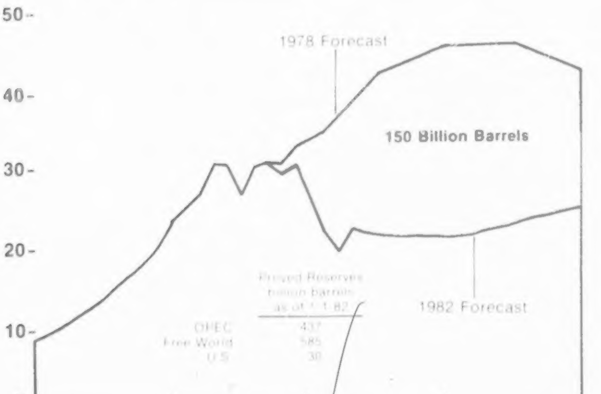
Switching to alternative or more reliable energy sources, such as natural gas and coal, has further reduced oil consumption. This effect is particularly pronounced in the northeast and middle Atlantic states where conversion to natural gas in residential heating has increased in the past four years. Many electric utilities have been able to switch from oil to gas in the U.S. and the Netherlands because of ample supplies of this cheaper fuel. In Japan, industrial consumers have shifted to coal to diversify their sources of energy.

> ***"...OPEC has exhibited many of the characteristics of a cartel, making large and rapid price increases in times of shortages and supply cuts to support prices in times of surplus."***

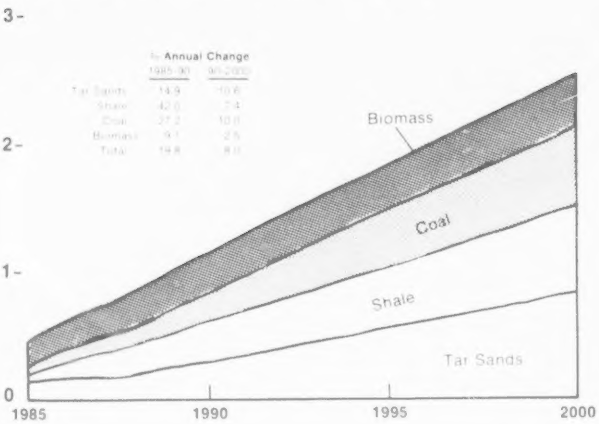
The depressed state of the world's economy has had its affect on energy demand, including oil. Many energy intensive industries, such as steel, aluminium, petroleum, forest products, and automobiles, are operating substantially below capacity. The resultant Unemployment and loss of consumer income have driven oil demand even lower.

During the past year a significant change has taken place in the outlook for synthetic fuels and alternative energy projects. This forecast indicates an adequate supply of oil for the remainder of the century with less upward pressure on world oil prices. The present expectation of lower oil prices makes the major investments required for many synthetic fuels and alternative energy projects look considerably less profitable. As a result, a number of projects have recently been cancelled or postponed.

OPEC Crude Oil Production M B/D



Free World Liquid Synfuel Production M B/D



The synthetic fuels contribution to future energy supply is substantially below that which was presented last year. Total free world production of synthetic liquids is now estimated to grow from about 0.5 million barrels per day in 1985 to 2.5 million barrels in 2000. In the U.S. the outlook is for synthetic liquids production of about 750,000 barrels per day in 2000. Additional postponements could reduce this level even further. The effect of these changes has been to lengthen the development phase of synthetic fuels projects by about five to 10 years.

The delay in development of a viable synthetic fuels industry would appear to be of concern to all nations depending on imported oil. These nations, however, benefit from the factor that has caused the delay: lower world oil prices.

There is still a risk that a larger, sudden decrease in world oil supply of significant duration could force oil prices well above the level needed for economic justification of synthetic fuels plants. The long lead times necessary for construction of these plants would permit high oil prices to be sustained for years. This risk is an appropriate concern of national governments, and some steps, such as the establishment of strategic petroleum reserves, have already been taken. Some governments are experimenting with various forms of subsidy to stimulate earlier development of a significant synthetic fuels industry.

The postponement of the need for commercial scale synthetic fuels plants allows more time for research and development of less expensive ways to solve the huge technical, logistical, and environmental problems associated with this new industry. Most governments are being properly cautious in not over-subsidizing development of commercial plants on a crash basis before the technology is proven. ■

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